February 1981

Smithsonian

Lancelot, Guinevere embrace in illuminated manuscript, one of many in the Morgan Library's collection (p. 52)

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Smithsonian (ISSN 0037-7333) is published monthly by the Smithsonian Associates, 900 Jefferson Drive, Washington, D.C. 20560.
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Subscription price $14 a year in U.S. and possessions, $22.00 elsewhere. Single copy price $1.25. Second-class postage paid at Washington, D.C.
Editorial offices, 900 Jefferson Drive, Washington, D.C. 20560.
Advertising and circulation offices at 420 Lexington Ave., New York, New York 10170.
Members: Please address all subscription correspondence and change of address information to P.O. Box 2955, Boulder, Colo. 80322
Postmaster: send 3579s to P.O. Box 2955, Boulder, CO 80302

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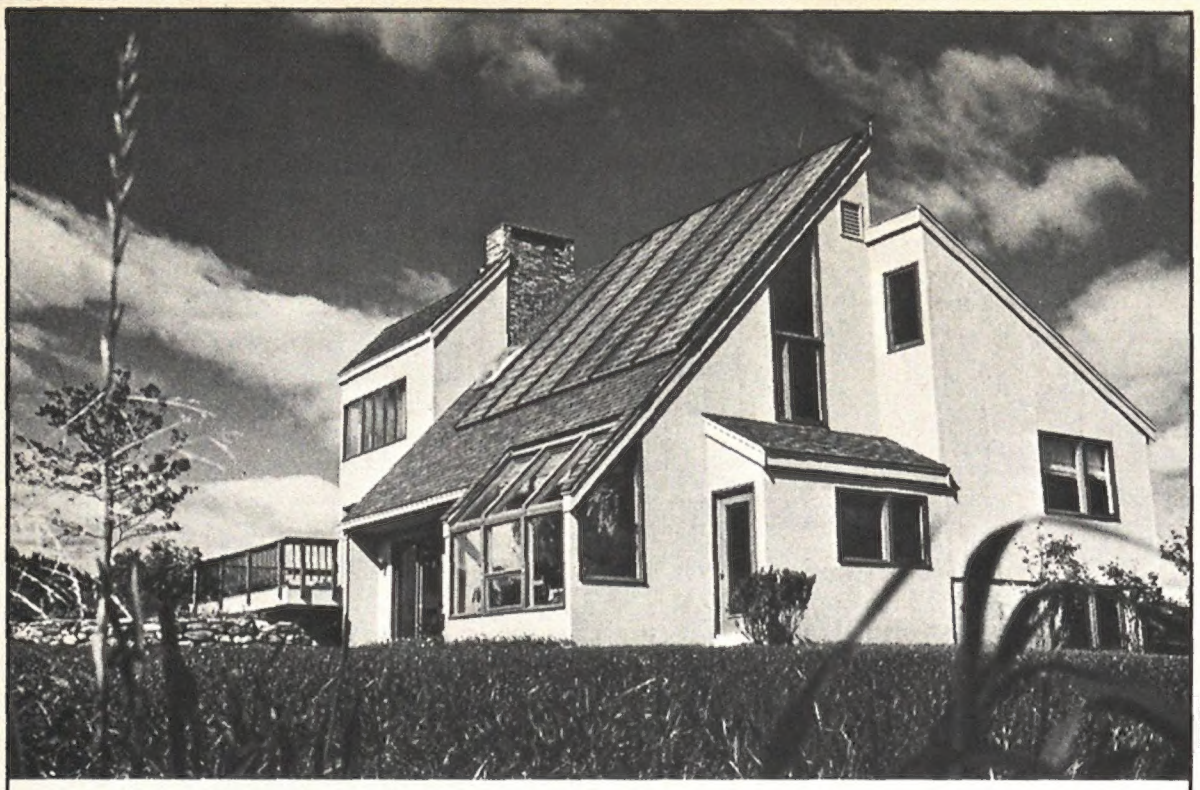
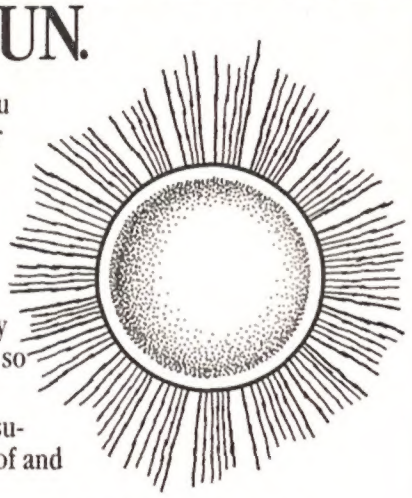


THE COST OF ENERGY RISES EVERY DAY. SO DOES THE SUN.



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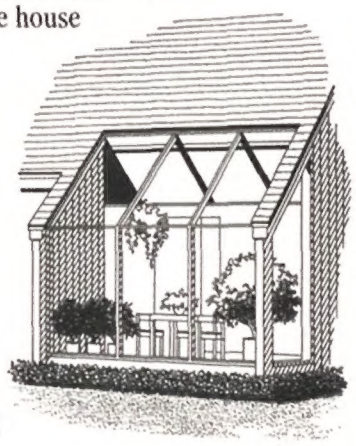

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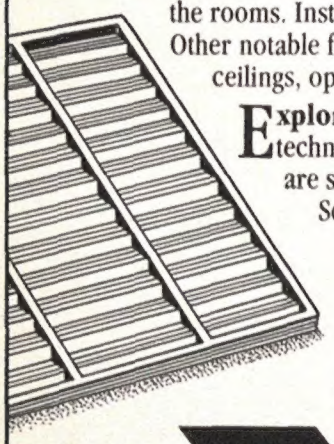

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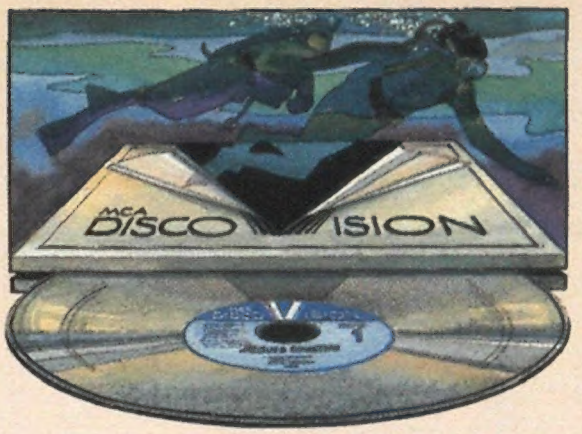

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Secretary Ripley's comments

The view from the castle

It is useful to learn about the American past at the Smithsonian, especially if it teaches us where we ought to be going

The early weeks of a new year are a time of pause and reflection. It is a time for resolutions, so often quickly forgotten or, at best, honored in the breach. But to carry out a resolution requires an act of will unrelated to calendar or season.

For us in Washington it is a time of change—new faces after an election, new resolves, new plans, perhaps new ways of looking at old problems. It should be that way, and newly elected politicians, along with vows to sweep everything clean, also speak of a time for reflection, a time for planning ahead.

But one of the dismaying things about government and planning is that action, when it comes, is often a *re*action to some other action. It does not follow that plans are inevitably carried out as their authors envisaged them. Rather, things are often done because something has just happened. Recently, our government called upon all its federal bureaus and departments to adopt a five-year plan, so that a perspective could be achieved of where they would be some years hence. Nothing could sound more sensible—to attempt to create a tidy path down which everyone would know the course to follow.

The Smithsonian, as an establishment funded in part by the Congress, complied with enthusiasm. We, too, have drawn up a five-year prospectus, as we call it, feeling that the latter word is more accurate than plan. Five-year plans in some other nations, announced with great fanfare, tend not to be remembered after the third or fourth year.

No matter; we have a five-year prospectus, accurate in its projections or not. But it at least gives one a sense of having a plan, somewhere to go, and a cause to defend in a time of change. The Smithsonian in the recent past has become as central to the American spirit as we have ever known it to be. It stands these days as something essential, presenting the message of our nation's history in the objects we show here in Washington. The place is beloved, not merely admired. It is a joy to walk about among its busy halls and corridors, to overhear our visitors' remarks and to become aware of this sense of belonging to all of America, of being owned by all its citizens.

What greater resolution could we have, then, than to know that we are obligated to demonstrate through our exhibits and teaching what American history and example can show for the future, and what the prospects are for us if we mind the precepts that we have learned? To have a clear view of the future is to profit from the past. But what is past is past, and only to be learned from, not an occasion for guilt feelings or the wringing of hands.

Our future can be thought of as an enterprise, in Hamlet's words, "of great pith and moment." So our pause for reflection at the beginning of a new administration should promote a resolve to move forward with conviction, proud of our history and confident in our future.

The mood of the nation in the last few years has been ascribed to a failure of the will. It seems rather to stem from a failure of confidence. So let us remember our past with pride and resolve to create a prospectus of strength and well-being for the future.

S. Dillon Ripley

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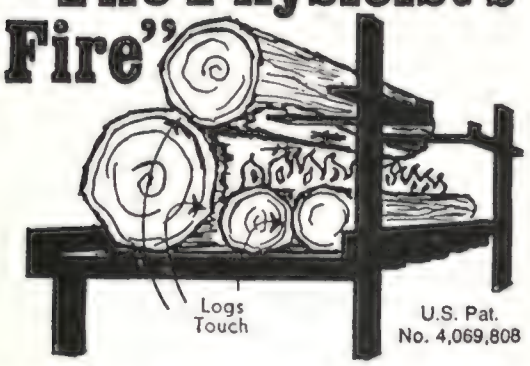
"The Physicist's Fire"



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Letters to the Editor

Salvation Army

Dear Sir: Jack Fincher's article, "An army salutes its hundred years war with Satan," in the December issue, captured the spirit of the early-day Salvation Army and brought it up to date.

I do have some concern regarding the emphasis given to the financial picture—"an $800 million crusade"—because it may convey the impression that the Salvation Army is a rich organization. A good deal of our resources are in the value of our buildings and properties. Most of our programs are building-centered, including hospitals, alcoholic rehabilitation centers, summer camps for children, corps community centers, gymnasiums and boys' clubs, and our extensive housing facilities for the elderly. Our 9,335 centers of operation in the United States served more than 12 million people last year. On any given night, more than 30,000 individuals are under the shelter of a Salvation Army roof.

Included in our assets are the hundreds of endowments and trust funds established by individual donors or board-designated, often restricted for special use. Other trusts include our retirement and fire-loss reserves.

Far from being a rich organization, we are building-poor, and have to bear heavy expenses on upkeep.

On behalf of the Salvation Army, I express gratitude for your excellent article telling the story of our first 100 years in America. We have received many favorable comments.

Ernest W. Holz, National Commander
The Salvation Army
New York City

Masquerade

Dear Sir: Kit Williams' book, *Masquerade*, is delightful. Your article sent me to Harvard Square to purchase and to peruse this treasure all the way home on the train. When the golden hare has been exhumed, I fervently hope that you will have a follow-up to explain the master riddle for your mystified readers.

Elizabeth Poisson
Arlington, Massachusetts

As soon as we have the answer to the riddle—if ever—we promise to let our readers know. Ed.

"The Clockwork Universe"

Dear Sir: Having been in advertising and editorial art for 30 years, I appreciate the excellent photographs accompanying Otto Mayr's article, "An offering of Renaissance clockwork masterpieces."

But I have a question: who in heaven's name put those big, ugly screws in those beautiful clocks? They look as though they were conceived and crafted by a group of superb artisans who, on completion, turned them over to their 14-year-old apprentices for assembly.

My artist's heart shrivels. I can almost hear the craftsmen of Augsburg twirling in their graves.

Kenneth Egbert
Oakhurst, New Jersey

Some of the screws were in the original clocks, but others were added in restoration over the years. Ed.

John Paul Jones

Dear Sir: Nicholas Dean's article mentions that around 1772 Captain Paul "vanished" for 20 months and reappeared calling himself John Paul Jones.

In North Carolina, there is a strong tradition claiming that the Revolutionary War hero was in Halifax in 1773 and took his surname from Halifax County's prominent politician, Willie (pronounced Wyley) Jones. Elizabeth H. Cotton has written a book, *The John Paul Jones-Willie Jones Tradition*, which is a full defense of the North Carolina position. The story alleges that in 1773 Jones found John Paul on the streets of Halifax and made him a permanent guest at the Jones' home, "The Grove." In gratitude to his benefactor, John Paul made Jones his surname. Willie Jones' friend

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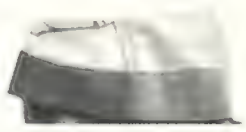

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Joseph Hewes was said to be the prime mover in getting John Paul Jones a naval commission.

There is no contemporary written evidence to support the tradition except a letter to John Paul Jones dated February 8, 1778, from Dr. John K. Read of Goochland County, Virginia. In the letter, Dr. Read wrote of the "many hours which (solitarily enough) passed between us at the 'Grove.' " All the Willie Jones papers were burned in a fire that destroyed his daughter's home in Virginia.

In Halifax, North Carolina, you would have a difficult time finding anyone who doubts the authenticity of the John Paul Jones story.

Undine C. Garner
Roanoke Rapids, North Carolina

Even though most historians do not accept this version, the tradition is not lacking in charm. Ed.

Dear Sir: John Paul Jones was *not quite* a forgotten man. Earlier in the year of his death (1792) Congress had voted $50,000 to make peace with Algiers, and Jones was commissioned as consul to carry out the tricky task of negotiating the release of our seamen held prisoner there. (They were eventually released on payment arranged by Joel Barlow in 1796.) Unfortunately, Jones died before receiving his commission. He is still carried in the Department of State's records, however, as the first American consul in Algiers.

Richard B. Parker
(Former Ambassador to Algeria)
Woodrow Wilson Department
University of Virginia
Charlottesville, Virginia

Cactus

Dear Sir: Vic Banks' article on cacti says: "Although the dangers to species survival are now focused in the Sun Belt, in the long run cacti could be imperiled in every state except Hawaii, Alaska, Vermont, New Hampshire and Maine—the only places where none grows."

Although as far as I know (and I have been all over the Hawaiian Islands) they do not have saguaro and the Joshua trees growing there, if Mr. Banks should ever go to the foot of Haleakala Crater he would see on its slopes, as far as the eye can range, hundreds of large prickly pear cacti growing and thriving. I think

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of Maui particularly, because there are so many prickly pear types growing there.
Kenneth Neubrecht
Berkley, Michigan
It is true that some species of cacti have been naturalized in Hawaii, but the author was referring to native cacti, as he stated in the preceding sentence. According to botanical experts, there are no native species of cacti in Hawaii. Ed.

Phenomena, comment and notes

Dear Sir: It is understandable that, even after more than 70 years, John P. Wiley jr. feels aggrieved by the rebuff given his grandfather in the saccharin affair. But it is regrettable that, in his spirited defense, he gives little of the evidence his grandfather adduced to the President. Instead, he offers what I consider the dubious hindsight of the Canadian rat experiment.

Since I usually enjoy Mr. Wiley's column, I hope he will not decide to test the weak case against modest consumption of alcohol, using "standard practice," by swallowing, as representative of two ounces a day for a year, 104 ounces a day for a week. I would miss him.
John M. Naff jr.
San Francisco
Even with Christmas, New Year's and a birthday thrown in, Mr. Wiley says he would not want to take on such a scientific challenge. Ed.

Kid vs. coal furnace

Dear Sir: How well I remember the days of the coal furnaces! Even though the fire had been banked the night before, on a cold morning it took a while to warm up. My father got up early to get the house warm before the rest of the family got out of bed.

Keeping the furnace going was an all-day job. When the house started to get a bit cool someone always had to open the damper, and, in a little while, someone went to the cellar and shoveled in more coal. When it got going good, the damper was closed. This occurred many times during the day. In winter, visits or shopping trips were always limited by the length of time the fire could remain unattended.
Mary W. Miller
Brecksville, Ohio

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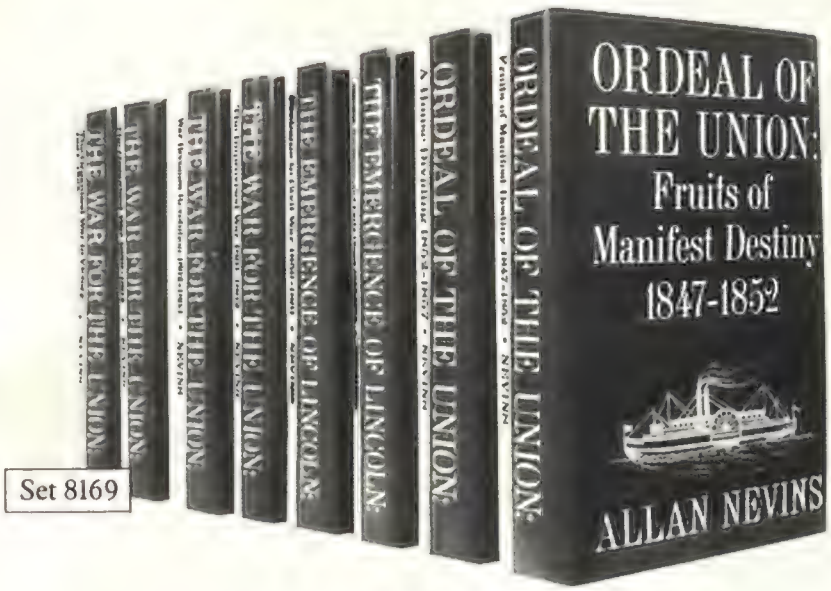
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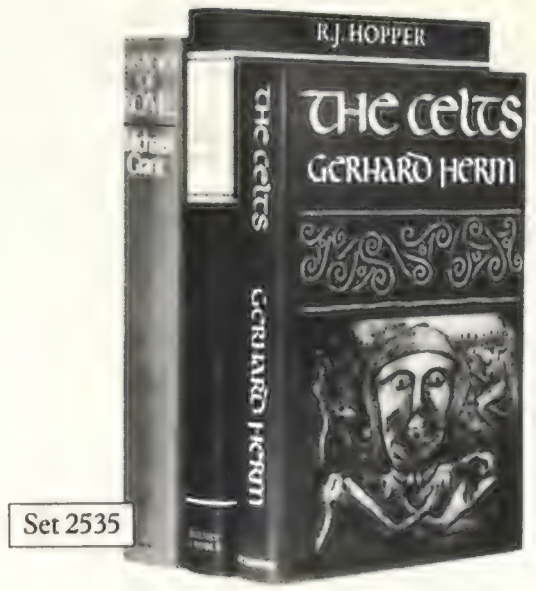

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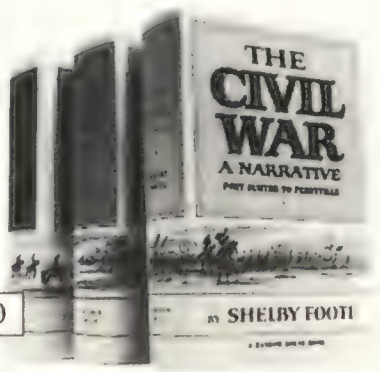

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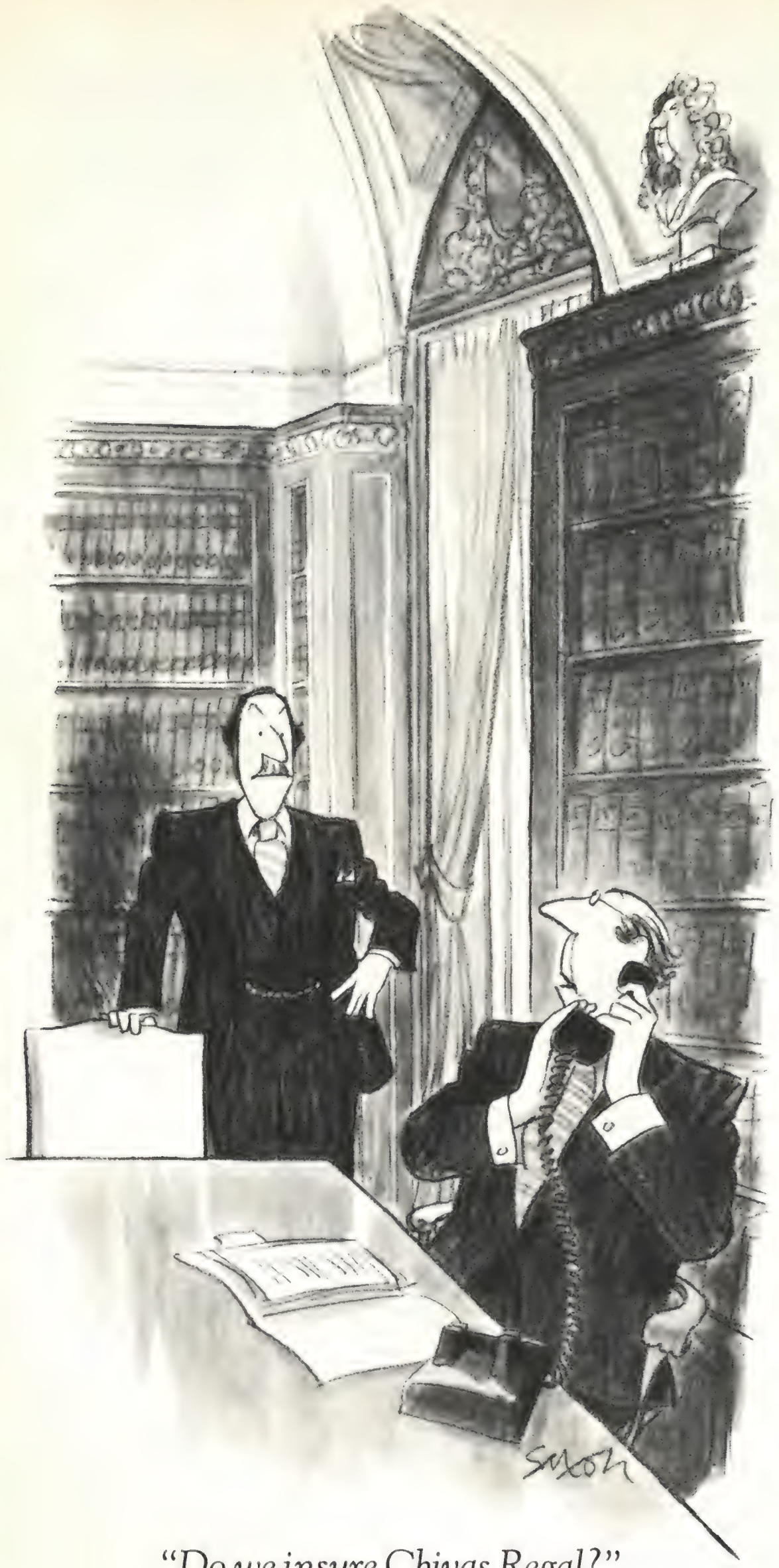

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Dear Sir: A coal furnace like the one in Michael Kernan's "Kid vs. Coal Furnace" casts a sooty shadow over my childhood, too. Only I was a girl and watched the action from a clean, safe distance. I have news for Mr. Kernan. Coal *is* back. Four tons of it are in my basement and a new coal stove graces my living room.

I got nervous last summer about oil supplies, the Persian Gulf and living in an all-electric home. So, in recent months I've been firing, stoking and hauling. There's the prospect of carrying those four tons of coal up the basement steps. "But," says a friend, "not all at once."

There is an escape hatch on the wall: the electric-heat thermostat. If the coal-fired system becomes inoperable, I'll turn on the thermostat.

Ruth E. Davis
Hastings, Michigan

Dear Sir: I, too, had some "happy" experiences with coal. In Battle Creek, Michigan, we burned Pocahontas—halfway between soft and hard coal. I, too, burned the ash basket and the coal-bin wall. Also, for spending money, I cleaned furnaces and was small enough that I could get my head, arms and shoulders through the door to clean the grate.

Many years later, we owned a house heated by natural gas, and my son and I dismantled one of the largest furnaces I'd ever seen, breaking it up with a ten-pound sledge. Too bad—the old furnace grates could have been used to burn gas, coal, wood, paper—even broken furniture.

John L. Sheldon
Corning, New York

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Around the Mall and beyond

Many years ago, when I was a newspaperman in Boston, I was assigned a feature article about the famous Perkins Institute for the Blind, near the banks of the Charles River. With the typical thoughtlessness of the relatively unafflicted, I had always considered the blind able, somehow, to cope without my having to worry about them. I did not suspect their sense of separateness, nor their pride in that separateness. Perkins opened my eyes to the full implications of their closed eyes —the endless, quiet triumphs that constitute every second of their lives.

So obviously I'm fascinated by "In Touch," an exhibit of 19th-century printing and writing for the blind. It opened in September to run for a year at the Museum of American History.

When you think of writing for the blind, you think of Braille. But there were dozens of attempts at systems of tactile reading and writing once the blind were discovered by society in the reform-minded early 19th century. Before that discovery, blind people were simply regarded as an embarrassment to be avoided and ignored.

Tactile letters which were just Roman letters embossed in relief so their shapes could be felt never worked very well. Other shapes were tried before the Frenchman, Louis Braille, came along. He got his writing idea from a French army officer's experiments with an embossed code that would allow soldiers to communicate silently in darkness. The code depended on an arrangement of dots, translated into phonetics.

As I write, a great deal of turmoil is going on in the stretch of land—part of it a parking lot—between the Hirshhorn and

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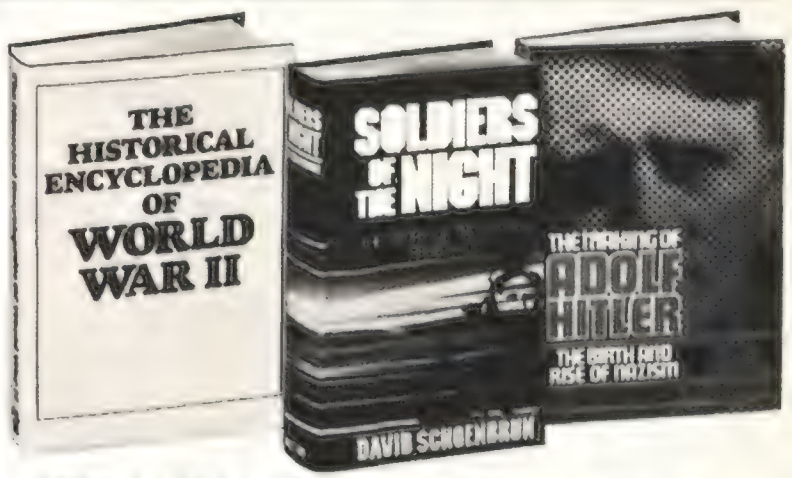

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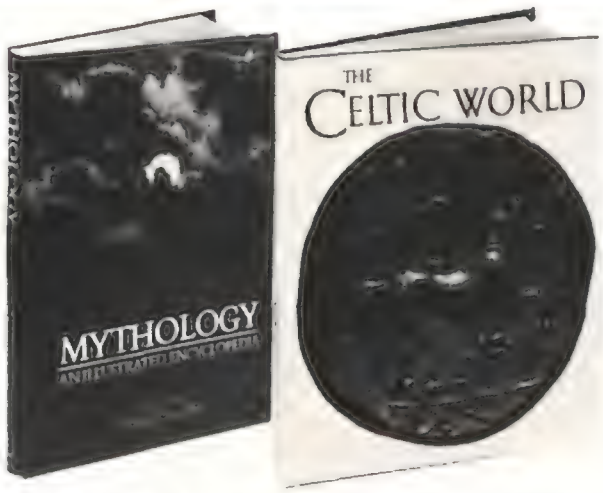

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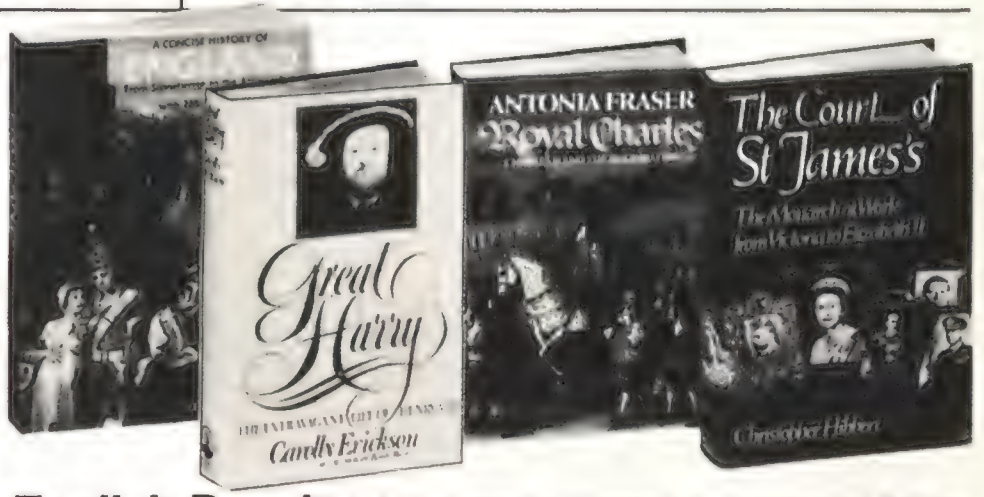

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the Arts and Industries Building. The ground has been dug up, and now concrete lanes are being built through it.

The reason is the production of a garden for the handicapped, scheduled to be opened in the spring. According to the Smithsonian's horticulturist, James Buckler, it will provide a journey among varied plants that will appeal to varied senses. Thus, if you can see, even partially, you will find bright colored flowers; if you are blind you can touch the leaves of banana plants and similar textured fibers and feel twisting trunks and branches. And you will be able to hear the gentle conversation of a Victorian fountain, smell flowering tobacco and geranium and other fragrant plants, and taste the herbs that grow beside the serpentine wall.

Three books have arrived with notable Smithsonian connections. That means that I have a right to take note of them, and that's a good thing because all three are very important and fascinating, each in its way, and all have beauty of content and presentation.

One is called *Treasures of the Library of Congress*. Because the Smithsonian played a part in getting the Library off the dime in the 19th century, and also because the former director of our Museum of American History, Pulitzer Prize-winner Daniel Boorstin, is now Librarian of Congress, and wrote a graceful foreword to this book . . . because of all that and possibly also because of an unfortunate mistake by the Library's clerical staff, I was invited to a lunchtime reception in that grand old building behind (or is it in front of?) the Capitol.

I'm sure that sometime during the sipping and munching and speechifying, someone mentioned how much the book weighs. I didn't catch it, but I know that if you try to read it in bed, it'll crush your rib cage. It was published by Abrams, who produced that other huge and marvelous tome on the National Air and Space Museum ("Around the Mall," October 1979), and printed in Japan on about the richest, thickest, heaviest paper I've ever seen, except in a local garage mechanic's calendar.

Author Charles Goodrum, who writes occasional pieces for *The New Yorker*, talks about the Library's collections—not just books, mind you, but prints, photos, movies, maps, Houdini's self-filling punch

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ladle and a gathering of Stradivari violins. To describe a copyright, he chose that of *Oklahoma!*, recalling that at the London opening the crowd wouldn't leave the theater after it was over, but kept getting the cast back on stage to run through numbers.

Seventy-six million objects make up the Library's collections—about the same number of items we have at the Smithsonian. In 1866, we moved our Smithsonian library over to the Library of Congress, thus giving it a hearty shove forward (see SMITHSONIAN, April 1980).

The second book was sent me by Frederick C. Durant III, a curator in the National Air and Space Museum until his retirement last year. This volume, *The Adirondack Guide-Boat*, is by Kenneth and Helen Durant, he (Fred's uncle) a noted journalist, she a famed cinematographer. You might think that these two would have come up with a book about their professional worlds. Wrong. They wrote about their true love. Kenneth died before this work of affection was done. His wife completed it. International Marine published it.

For generations the Durants have been associated with the Adirondacks—that wild jumble of mountains and lakes and forest in northern New York. The family has known its people, from trappers and guides to debutantes on summer vacation in this magical place. And the authors have settled on the one feature of the region that speaks of it more clearly than any other. The guide-boat.

It was designed by woodsmen in the early 19th century—a light, strong boat to move with oars, not paddles, to carry a hefty load and still be carried itself on brutal portages. Ribs originally were crooked spruce roots, dug from the forest. Thin planking was beveled so that overlapping planks produced a glassy smooth outer shell. Generally the oarsman sat forward, facing his cargo, be it a load of furs or that debutante with her parasol.

An esoteric subject for many people, I suppose, but for a few, the guide-boat is a mania. Here's its own book.

Finally, Edward S. Ayensu, director of our Office of Biological Conservation, has edited *Jungles*, a beautiful, colorful book from Crown, rich with illustrations and diagrams of everything from mosquitoes to 37-foot anacondas.

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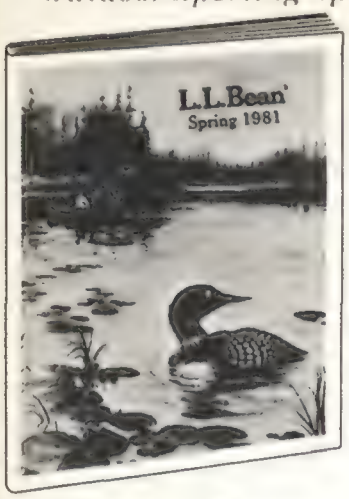

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help in their conservation. We're losing jungles at a frightening rate, thanks to overpopulation in the tropical belt and consequent need for arable land. The point comes through, but in making it, Ayensu's book also reveals the wonderful interwoven fabric of jungle life—the effect of filtered sunlight on plants and the creatures that feed on plants, the life in the topmost canopy of the forest, the strange plants of the forest floor, like *Rafflesia* (I remember it because I saw it once), which smells like carrion and so attracts the flies that pollinate it.

Walking peacefully through the Victorian Garden recently, minding my own business, as is my wont, I became aware of a group of people staring up at the castle's big square tower and also at a huge rented crane and also at the stone figure of a cleric in bishop's miter, carrying what appeared to be a pair of tongs. The figure was partially wrapped in burlap and was draped with ropes, and a young man was fixing a giant hook to the apex of the rope network, and the hook was attached to a cable which led to the crane and down to a winch. Even as I watched, there was the thunder of a heavy Diesel, the winch spun, the cable tightened, the ropes creaked and the stone figure rose.

James Goode, curator of the castle, took the opportunity to introduce me to Saint Dunstan before the latter ascended, looking uneasy, to a niche some 50 feet up in the wall of the square tower. Invariably enthralled by such carryings-on, I watched the saint's heavenward progress. A scaffold had been erected beside the niche, and here he paused while a couple of men prepared the way for him.

At last Dunstan, now looking quite uncomfortable, was lowered onto the planks, and by rocking him back and forth the men managed to squeeze a sort of flat skate under him. He was gently jostled, 50 feet in the air, then carefully skidded across the void to his plinth.

The saint filled a niche that has been empty since the final touches were put on the castle in 1855. While in England, Richard Howland, Special Assistant to the Secretary, met Dunstan and sized him up as perfect for the job. He had been filling a similar niche in Westminster Abbey, but air pollution had got to him and he was removed.

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Here, a splendid little Goldfinch cocks his head to investigate a cluster of wild thistles. The individual barbs of his gold and black feathers—even the tiny joints of each leg and foot—are portrayed with exacting precision. Each thistle is a wonder in itself, with every one of its needle-sharp quills superbly captured. And the graceful bell of snow-white bisque porcelain is embellished with *pure 24 karat gold.*

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The saint's mortal life (910-88) involved a roll call of Anglo-Saxon kings. A well-born monk and blacksmith, he became abbot of Glastonbury. He was banished for scolding King Edwig, recalled by King Edward, who made him Archbishop of Canterbury, advised Edward the Martyr and crowned Aethelred. He carries those tongs because of his blacksmith days and as a reminder of the

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"St. Dunstan, as the story goes, Once pulled the devil by the nose. . . ."
Verse and Wallace Tripp drawing from *A Great Big Ugly Man Came Up and Tied His Horse to Me.*

time the Devil tried to tempt him by appearing before him as a beautiful maid. Unfortunately for Old Nick, his skirts rode up revealing cloven hoofs. Doughty Dunstan plucked his red-hot tongs from the forge, and with them seized the satanic nose (above).

They say the devil flew off, howling, until he spotted the spa at Tunbridge Wells and plunged in. That's why its water is reddish and tastes of sulphur.

Still clutching the tongs, Saint Dunstan has watched nearly a century pass. He's a gift to us. "Now," a workman told me, "we set him up there with mortar, and pretty soon the pigeons finish the job, and he'll be safe."

I checked Saint Dunstan this morning. He looked vastly relieved that it was all over. The pigeons had just barely started.

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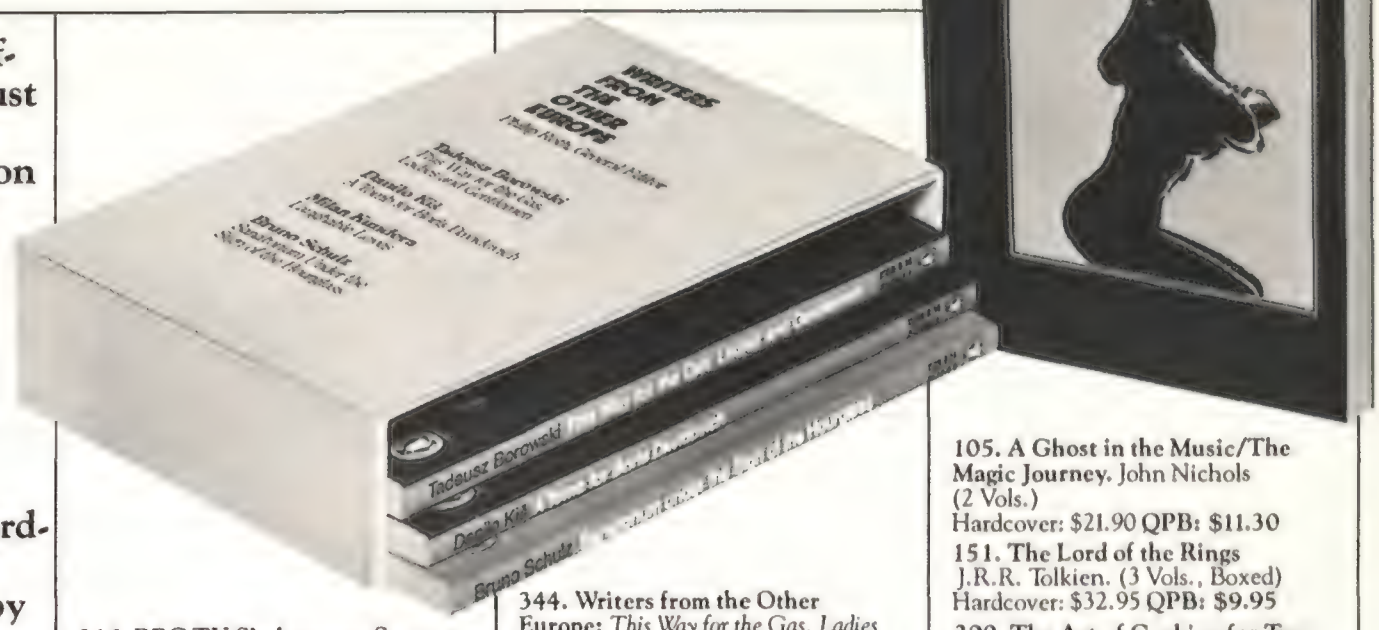

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Phenomena, comment and notes

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When I was a backyard astronomer, I used to lie in a chaise longue outside at night and try to feel the motions of the universe. I would imagine I felt the Earth rotating to the east at a modest 750 miles an hour or so. Then I would figure out where the sun was under me, and try to sense the Earth moving at 18 miles a second in its endless fall into the sun. My stomach would drop as the solar system plummeted toward Hercules. I would find the Milky Way, the equatorial belt of our own galaxy, and join its 200-million-year waltz. On a good night I would have a high time just looking at the stars.

Nowadays I look closer to home, but find myself becoming even giddier, and with good reason. Instead of looking at a star, I look at a tree. And promptly fall through the glass of our everyday world into a whirling void that makes me dizzy.

We all know in a textbook, give-it-back-on-the-exam kind of way that the tall, leafy object we perceive is really nothing more than a lot of empty space occupied in a regular way by protons, neutrons and electrons, exactly the same particles that comprise a rock, a baby or a star. And we're aware in a vaguer way that these elementary particles themselves are made up of still smaller and less graspable particles in turn. But lately I've been doing some reading, and it seems the situation is getting out of hand. The tree may not be there at all, as a tree, until I or you or someone perceives it as a tree.

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And that "tree" and I or you may be part of the same one wholeness that fills the universe.

For me it all started last fall, with an article in *Commonweal* (October 10, 1980). On the pretext of reporting an annual meeting of the Association of Transpersonal Psychology, Davis S. Toolan, S.J., an assistant editor of that journal, moved among psychology, theology and quantum mechanics in leaps so powerful as to leave a science writer gulping for air. Like a cliff diver at Acapulco, I jumped into water out of my depth and spent day after day happily housebound by the flu reading a quarter of the writers he dashed off and found myself reeling from more than the flu.

Early on Father Toolan quotes Niels Bohr: "Those who are not shocked when they first come across quantum theory cannot possibly have understood it." Toolan shows that the statement is truer than ever today.

For some centuries we have thought of nature as separate from ourselves, something we can take apart and understand like a watch, a machine. Not so, apparently. It's not just that the tree is a fog of subatomic particles too small for us to see. It's that the tree is really composed of waves of probability—potentials—that don't even become particles until some kind of counter—such as our eye—detects them and in that act transforms potential into something "real."

The old saw about a tree falling in the forest when there is no one around to hear it is true. Acoustic waves there may be, but with no ears to convert them, there is no sound. The tree does not even have to fall to raise such a question. Quantum mechanics tells us that there is no tree at all until someone sees it. The tree is some combination of whatever potential is really there, our physical perception of what is there, and what our minds make of it.

The hologram is the analogy of choice, and it holds up well. Holograms are a science writer's bread and butter: new, high-tech (you need a laser to see them), and full of possibilities. In essence, a hologram is a photographic plate that captures not an image but the interference patterns of light waves coming from an object. Shine a laser through the plate, and the object is reconstituted in space before you in three dimensions, not the

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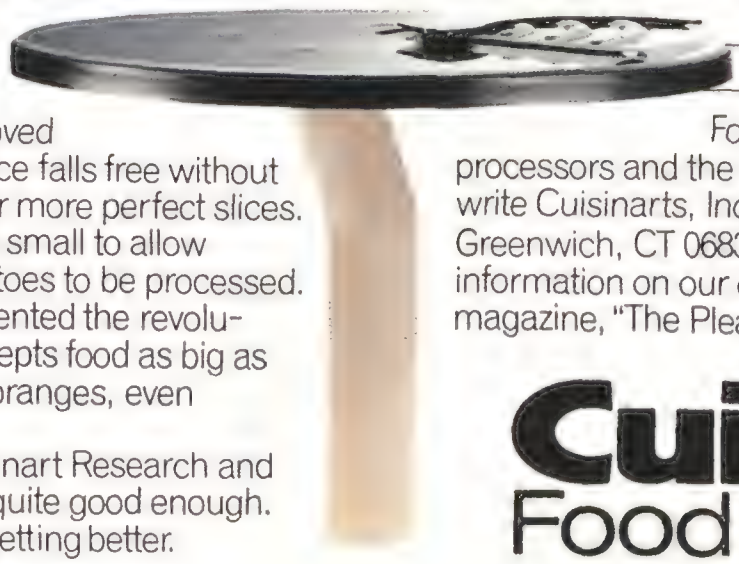

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two dimensions of a photograph. Move your head, and you see a different view of the object.

What's most remarkable about a hologram is that every part of it contains all the information about the whole object, just like the DNA in every cell of our body contains the blueprint for the whole thing. Break a hologram in half, shine a laser through just that half, and the whole object is seen.

Our brains seem to be holographic in storing memories. Memories are stored in every part of the brain. Destroy one part: the memory survives in others.

Now it turns out that the whole universe may be a single hologram: the information about all of it is encapsulated in every part of it. Including you and me. This idea is not just pretty theory, the sort of thing that trickles down to cocktail party talk. This idea appears to have been proved in at least five separate experiments in the last decade. In fact, at the moment, there's no way out.

The experiments have to do with creating pairs of particles, each of which then flies off in opposite directions. Each particle seems to know instantaneously what is happening to the other. Quantum theory had predicted it. Einstein had pointed out the paradox, and now it is really happening in the laboratory.

If two objects are separated in our ordinary space-time, it should be impossible for information from one particle to reach the other at a speed faster than light; but it happens instantaneously.

Summing up the experiments and their implications in *Scientific American* (November 1979), Bernard d'Espagnat of the University of Paris put it this way:

"The violation of separability seems to imply that in some sense all these objects constitute an indivisible whole."

Wholeness is the key, and Father Toolan's article in *Commonweal* led me to a man whose ideas about wholeness not only make sense out of quantum physics but have remarkably much to say about such "real-world" concerns as politics, economics and society. He is British physicist David Bohm of the University of London, and his latest book is *Wholeness and the Implicate Order.*

Instead of starting with the fragments of our "real" world that we can actually see, such as my tree, or even an atom, Bohm's ideas begin with the whole uni-

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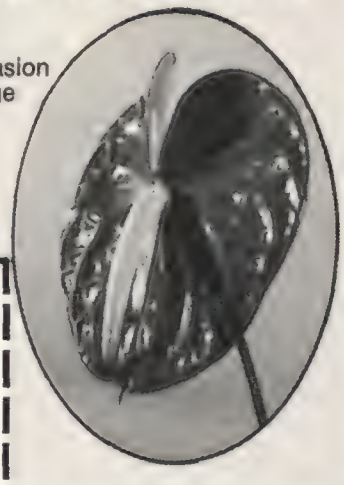

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verse as a constant flowing, a flux. In this river, the currents from time to time produce little vortices, little whirlpools that we can see. These are the fragments of the sensible world that we do see, trees and galaxies. He sees the universe as full, as a sea of energy in which the ripples on top are the pieces of our world, and where the Big Bang was merely the coming together of ripples to form a high wave which then spread out in the swelling rings of an expanding visible universe.

This flow, this "holomovement," as Bohm calls it, is some kind of higher-dimensional reality, in which everything we know is enfolded like the images in a hologram. When we look at a tree, we are seeing an unfolded aspect of this higher reality.

Talk of higher dimensions has always made me feel cheated, left out by some mathematical trick. But Bohm offers a nice device for thinking about it. Imagine an aquarium with a fish swimming inside. Two television cameras are aimed at the fish through two of the walls, at right angles to each other. You are looking at two TV screens. In one the fish appears head on, in the other you see it from the side. Each of these images is a two-dimensional projection of a three-dimensional fish. The real fish is of a higher dimensionality than the two projections: the three-dimensional reality holds these two-dimensional projections within it.

Just so, we can think about the particles we talk about in physics as only the projections of higher-dimensional reality. Under ordinary conditions, it works perfectly well to treat them as real in themselves. But, as we are being forced to concede by quantum mechanics, not always.

In quantum mechanics we have to deal not only with the problem of separated particles acting as though they were connected. We also have to live with being forced to describe an electron sometimes as a particle and sometimes as a wave, depending on what we are doing at the moment. We even have to deal with discontinuous movement, as when electrons move instantaneously from one state to another without passing through any states in between.

We have an even deeper problem, Bohm explains: while classical physics works fine in our everyday world, we need both relativity and quantum mechanics to explain our universe at the lev-

Space Scape

A new painting by Mark Rickerson offers opportunity for JS&A customers in this exclusive print offering.

The painting above is by one of America's fastest rising American artists, Mark Rickerson. Rickerson's works represent some of the most popular space paintings ever created and they have been displayed at some of America's leading galleries and purchased by many space-age companies.

About one year ago, JS&A's president was traveling through Honolulu on a trip back from the Far East when he stopped by an art gallery to examine some paintings.

PRESIDENT'S IDEA

While in the gallery he saw one of Rickerson's works. Since JS&A markets space-age products, our president thought it would be a great idea to feature one of Rickerson's paintings on the next cover of JS&A's space-age catalog.

So he bought the painting and traveled to the Hawaiian Island of Maui, where he met with Rickerson in his studio to discuss reproduction rights. Rickerson refused. His paintings were growing in value and he did not want to commercialize his efforts at that stage of his career.

PROGRAM UNACCEPTABLE

Several months later however, our president received a call from Rickerson. The artist wanted to know if JS&A would be interested in offering limited edition prints exclusively to its customers, many of whom would appreciate the subject matter because of their interest in space-age electronics.

This time we refused. Rickerson wanted JS&A to offer 300 signed and numbered proofs for $200 each. A typical JS&A response, however, would far exceed the available prints and we would have to return too many orders. In addition, Rickerson had been getting $350 for his prints and we didn't understand why he would lower his price.

RICKERSON'S PLAN

But Rickerson had a plan. Those who would respond to our offer would have their name placed in a computer and at the end of our promotion, the computer would randomly select 300 people eligible to purchase the prints. All respondents however, would make up his personal mailing list.

In the future, whenever a new Rickerson print would be announced for $350 or more, those on his personal list would be eligible to purchase that print during the next three years at only $200 regardless of Rickerson's status, fame or the value of his paintings.

Rickerson looked to this promotion as a way of establishing himself and his art firmly as a major factor on the American art scene and at the same time establish a strong following. JS&A in turn has not only agreed to assist Rickerson in that goal, but will be actively promoting his art and his products during the next three years. This offer to participate in his print program will end on February 28, 1981 and only those who respond will be allowed to participate during the next three years.

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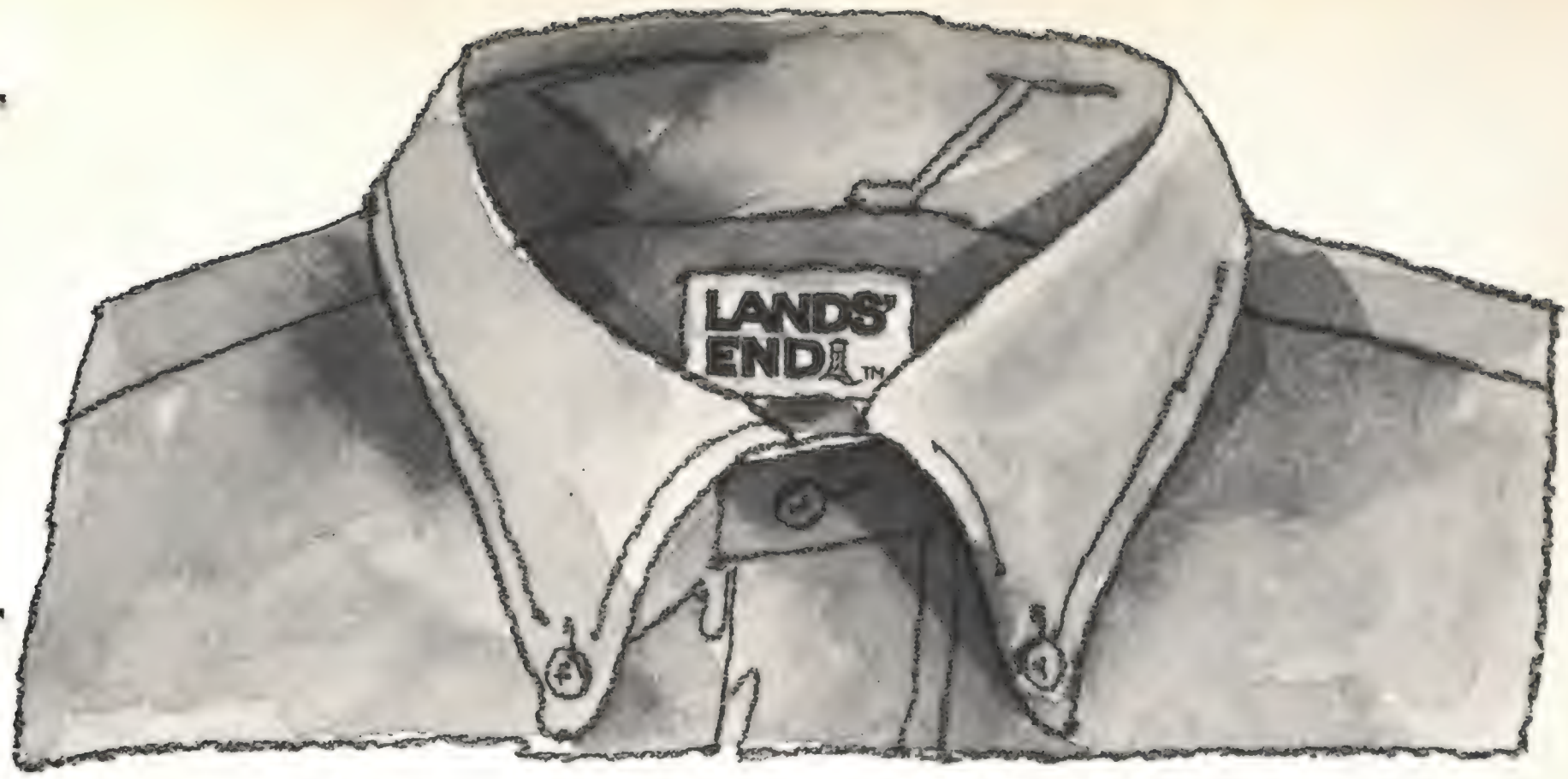
els of the very large and the very small. Both work nicely, and have become indispensable, but they contradict each other. Einstein didn't turn his back on quantum mechanics out of simple pride of authorship—he couldn't stand the contradiction. Physicists go about their work perfectly conscious of these paradoxes, and of course, they are right: we can only work with what we can "see." But ignoring the fundamental problem doesn't make it go away.

But Bohm's underlying flowing wholeness can resolve the contradictions. If we start with the premise that when we "look" at an electron, we are seeing only a limited aspect of a higher-dimensional reality, we can expect to see it sometimes head on and sometimes sideways. We can expect to see a vortex in a stream disappear here and reappear there. If we think of our theories not as reality in themselves but both as a way of explaining what we see and as a clue or an avenue to a deeper reality, we will then keep progressing to better explanations of our sensible world and at the same time keep approaching the deeper reality.

Bohm's book is not only about physics. He wants us to become aware that our view of our whole world has become fragmented, especially in the sciences but also throughout our everyday lives. We divide our universe up into stars and atoms, and we divide ourselves from nature, and ecosystems from each other. We divide ourselves into races and nations, into political and economic fragments, and deny any underlying wholeness. He says, "It is not an accident that our fragmentary form of thought is leading to such a widespread range of crises, social, political, economic, ecological, psychological, etc., in the individual and in society as a whole. Such a mode of thought implies unending development of chaotic and meaningless conflict, in which the energies of all tend to be lost by movements that are antagonistic or else at cross-purposes."

Whether or not Bohm turns out to have all the answers, I find his concept of wholeness extraordinarily appealing, as an explanation of the riddles of modern physics and as a prescription for human living. It's enough to make one long to be sick again, and stay home all day and read. I only hope Father Toolan gives me enough time before he goes to another meeting.

—John P. Wiley Jr.



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In shallow water around a Mono Lake tufa grove, California gulls feed on abundant brine shrimp.

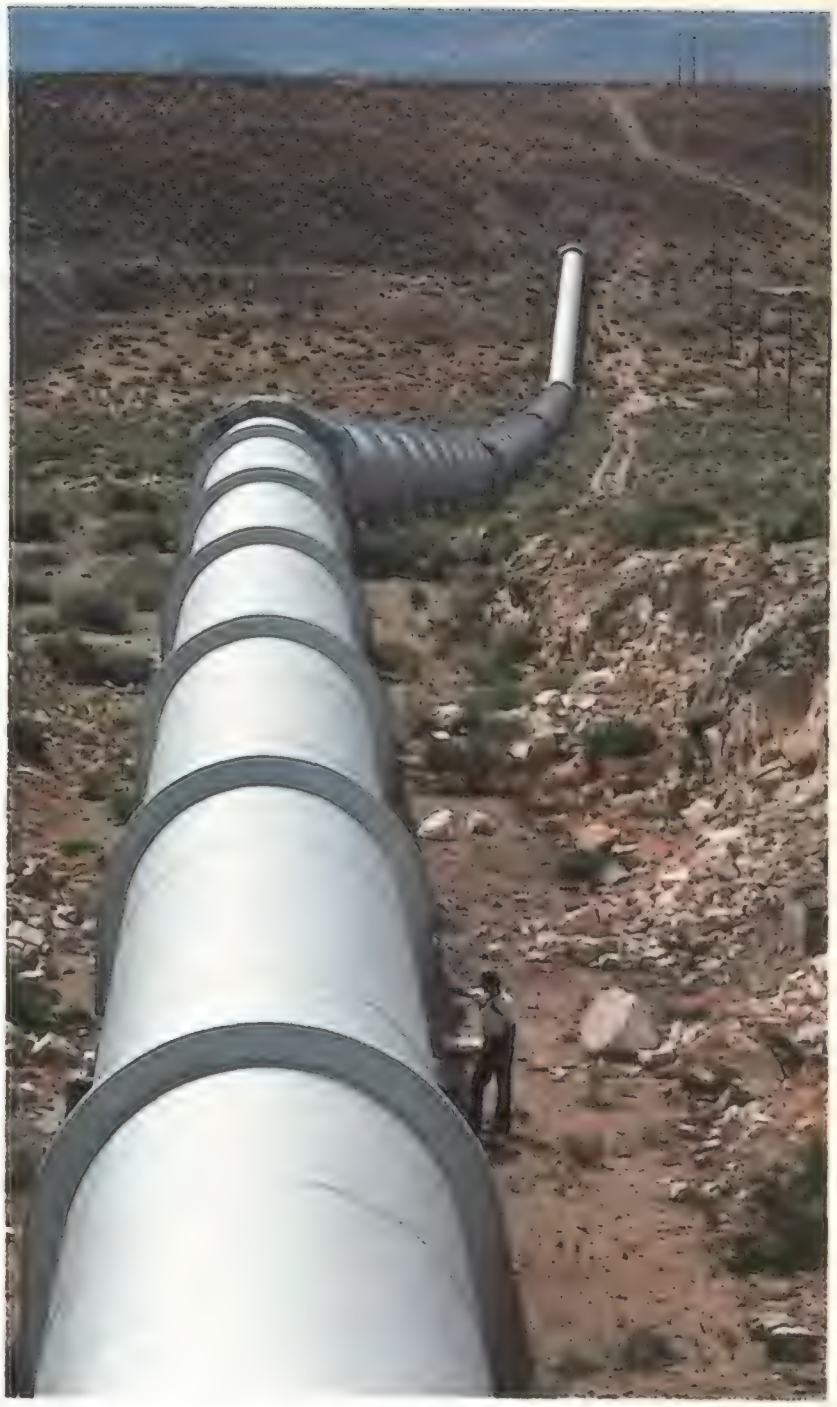
By Daniel Jack Chasan

Mono Lake vs. Los Angeles: a tug-of-war for precious water

A unique and eerily beautiful ecosystem may be destroyed as its feeder streams are diverted to slake the city's mighty thirst

Photographs by Liane Enkelis

World's second largest gathering of this species of bird is here; largest is at Great Salt Lake.



Fresh water that once fed lakes is routed into L.A. Aqueduct, examined here by LADWP's Jim Wickser.

From the dock on the western shore, the surface of Mono Lake gleams blindingly in the morning sun. Spread across that bright surface as far as the squinting eye can see are the dark silhouettes of floating birds. Close to shore, in a little cove among pale pumice boulders, small gray and white birds swim and wade in erratic circles. The little birds are phalaropes (p. 45), on their way south from the Arctic or the prairies of western Canada, where they breed. Right now, they're filling up on brine flies, accumulating enough fat to fuel them to their next stopping place. The birds farther out are California gulls (above), which have come here to breed, and migratory grebes. When their heads plunge toward the water, they are after not flies but brine shrimp, which thrive in the salty water of the lake.

On this morning the lake appears rich in life; but in fact, Mono Lake may soon be dying, a victim of the growing thirst of the metropolis 300 miles to the south —Los Angeles.

At about five o'clock two young men set out from the dock in a fiber-glass motorboat. They are shrimp fishermen for Jungle Laboratories, which will freeze the shrimp here, truck them to Texas, freeze-dry them and sell them to aquarium-supply stores. Both fishermen wear rubber gloves; the lake water is not only salty—more than twice as salty as the ocean—but also extremely alkaline. It stings broken skin.

The boat roars out to a wood raft not far from the northern shore. Fine-mesh nets extend from all four sides of the raft, stuffed with what looks like a dull green mush—actually hundreds of thousands of brine shrimp. The fishermen put plastic buckets on the raft and then pull in the nets, dumping their

Tug-of-war over Mono Basin water

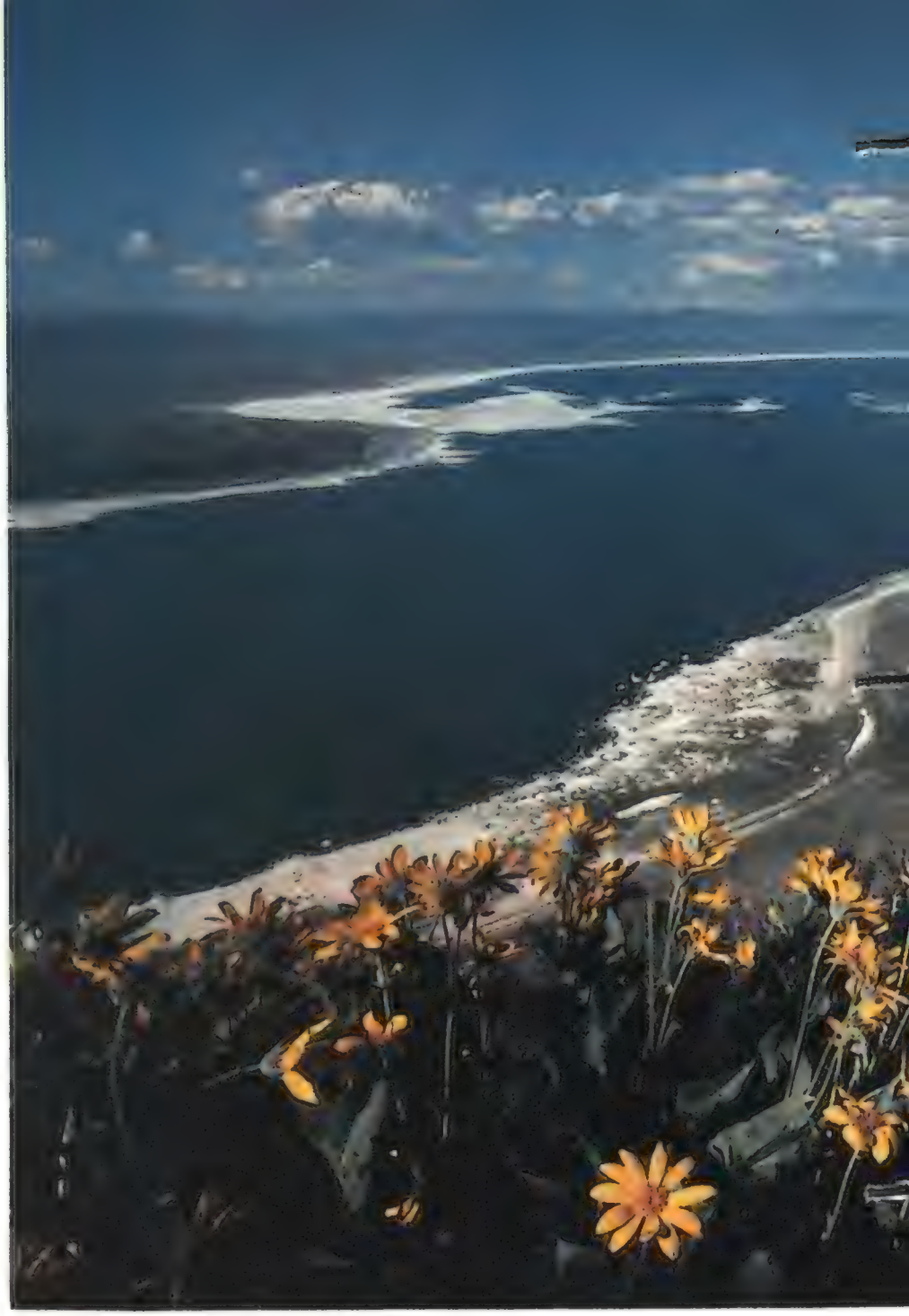
contents into one bucket after another (p. 46). Although the shrimp are only about three-eighths of an inch long and so light that it takes some 6,000 to make a pound, the buckets loaded with shrimp and water weigh 20 or 25 pounds apiece. On a good day, the nets on this and other rafts will yield more than 200 buckets. That's a lot of shrimp, but a tiny fraction of the shrimp population in this 50,000-acre lake.

Mono Lake has stood here without drying up for at least 700,000 years. It has no outlets, and has not overflowed since the last glacial epoch. Water has evaporated from its surface in the high desert sun, leaving behind its minerals, and eventually creating a lake high in chlorides, sulfates and carbonates. Algae thrive on the surface and in the depths of this water, and brine shrimp and flies thrive on the algae. There are no fish, and therefore nothing to deplete the populations of flies and shrimp except the birds, which come by the hundreds of thousands. An estimated 800,000 eared grebes visit the lake every year, along with 100,000 phalaropes and smaller groups of snowy plovers and other birds. Tens of thousands of gulls come to nest.

Some of the gulls hang around the raft, hoping for a bite of shrimp. Looking beyond them to the west, you see the steep, sage-covered slopes of the eastern Sierras. Behind those slopes you can barely see the snow and rock of a high peak. From farther back, you could see the peaks—11,000, 12,000, 13,000 feet—in a solid line. To the southwest, some 400 feet above the lake, lies the town of Lee Vining—"pop. 315, elev. 6,780" says the sign at the edge of town.

The fishermen load the buckets into the boat and

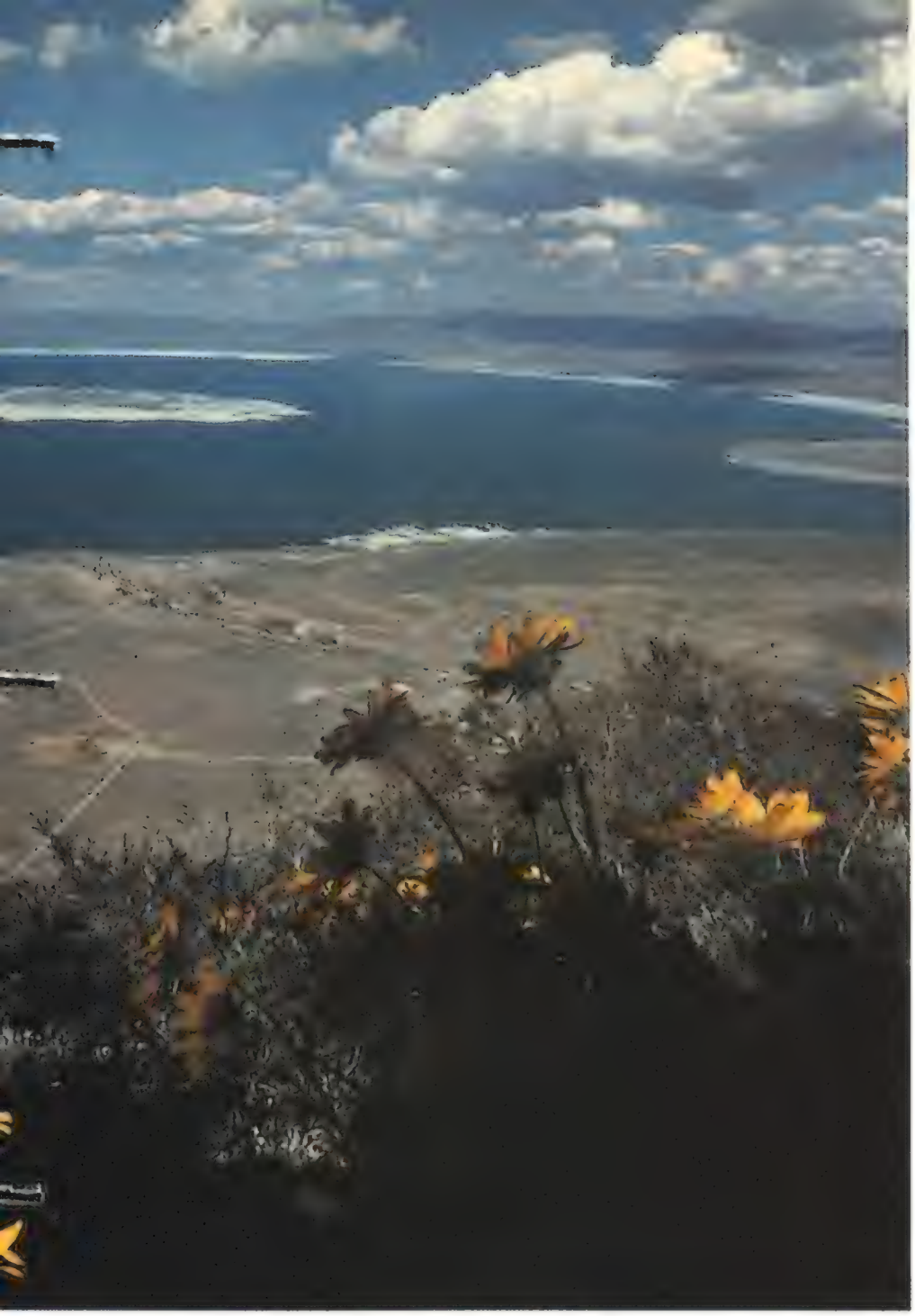
The author, a frequent contributor, wrote about pest control in January 1979. His book, Up for Grabs, *is about conflict over natural resources.*



Due to lake's 44-foot drop since 1941, Negit Island (upper left) is now a peninsula, allowing coyotes

Clumps of brine flies, staple food for visiting phalaropes, dot shoreline; shrimp are below.

For 100,000 phalaropes, Mono is refueling stop on annual long haul from as far north as Arctic zone.



access to island's gull rookery. Despite fence, few birds nested there successfully last summer.

roar back to the dock. Close in, the bottom of the laden boat scrapes rock. Why not build the dock where a full boat will have more clearance? Red Nichols, the Texan who owns Jungle Labs and drives up every summer to run the shrimping operation, has certainly thought of that. The trouble is, the lake has been receding. Look up the slope, beyond the grass and scrub several hundred feet to the metal building where the shrimp are washed and frozen. The building site was almost on the water when the shrimp fishery began in 1939. The outcropping of pale rocks about halfway between the plant and the current shoreline was the lake shore when Nichols arrived in 1971; he used to tie his boat to one of the rocks. Now the lake has dropped still farther, and the fresh fill that extends the road on the south side of the dock is Nichols' effort to keep up with the water.

Choking to death on salt

Eventually, the shrinking of the lake will be more than an inconvenience. As the volume of water decreases the concentration of salts increases, and at some point the lake will probably become too saline for shrimp, flies or algae to survive in it. When the invertebrates go, the birds will go, and so—if it has been able to hang on to the bitter end—will Jungle Labs. There is also a chance that even before the food supply disappears, the birds will simply not be able to stand the salinity of the water. The bird populations that are threatened include what is probably the largest single concentration of migratory grebes in western North America, one-third of the total population of Wilson's phalaropes and one-fifth of the total population—95 percent of the state population—of California gulls. The lake that many fear will be drained of life by being shrunk is among the oldest continuously existing ones in North America.

It isn't hard to find evidence of Mono Lake's decline. From a distance, the lake is surrounded by a wide white ring; up close, the white is a solid crust of salts, left behind when the water evaporated, that crunches underfoot. Beyond the salts is a grassy marsh. You can find the boards of old docks lying in the grass, hundreds of feet from the water, and you can find old, unmaintained asphalt roads leading down to what was once the shore, at the upper edge of the exposed salt.

The white salt, gleaming like bleached bones in this desert landscape, contributes to an overall effect that evokes adjectives like "mysterious" and "surreal." From the salt and from the shallow water at the northwest and southwest of the lake rise little Stonehenges, like two-story sand castles turned to stone, monoliths, miniatures of the nearby Sierra peaks, all stark white

Tug-of-war over Mono Basin water

and vertical against the blue water of the lake. The shapes are tufa, formed by the interaction between the freshwater springs and the lake's alkaline water, and they, too, are surreal (pp.50-51).

While the mood of the shore may be mysterious, the lowering of the water level—which has exposed much of the tufa and left behind the salts—is no mystery. Mono Lake is fed by water from the High Sierras. Snow accumulates every winter and melts every spring, feeding streams that run eastward into the lake. Even when most of the snow is gone, the high slopes are dotted with drippings, seepings, rivulets, filled with the sound of rushing water. A great deal of water flows down from the mountains, and it all starts so high up that if it were channeled properly, it would flow all the way to Los Angeles—which is exactly what's happening.

If the flow of water from the High Sierras to the lake follows an obvious hydrological logic, the flow of that same water south to Los Angeles follows an equally obvious political logic. Los Angeles started outgrowing its water supply in the late 19th century. If the city was to continue growing, another source of water was needed. It was found in the Owens Valley, just south of the Mono Basin, where streams from the Sierras flowed ultimately into saline Owens Lake.

Farmers were using that same water to irrigate some 60,000 acres, turning desert into orchards and fields. They didn't want the water to be shipped south. Suffice it to say that the resulting conflict provided inspiration for the movie *Chinatown*, that the Los Angeles Aqueduct was dynamited repeatedly during the 1920s, that farmers at one point took control of the main water diversion gate, and that the water ended up in Los Angeles, turning Owens Lake into a salt flat and making possible the city's rapid expansion during and right after World War I.

Suffice it to say, also, that the city's growth soon outstripped the capacity of the Owens Valley to provide water. In 1941, water from the Colorado River began flowing to the L.A. area. In that same year, having established water rights on the major streams that fed Mono Lake, the Los Angeles Department of Water and Power (LADWP) began diverting Mono Basin streams into the L.A. Aqueduct before they reached Mono Lake. When a second aqueduct was completed in 1970, L.A.'s diversions increased, and the lake, no longer being fully replenished, started dropping rapidly. That rapid decline has deposited the crust of white salts that is now visible from miles away.

The lowering of the lake after 1970 didn't go unnoticed, but it didn't evoke any widespread concern. Among the interested was a young biologist, David Gaines, from the University of California at Davis. Although he had been visiting the lake on and off since 1963, during the early 1970s he didn't realize it was shrinking. Then, in the summer of 1974, the nonprofit California Natural Areas Coordinating Council hired him to inventory unique natural areas in Mono Coun-

On a raft, fisherman empties net for Jungle Labs, which harvests 100 tons of brine shrimp each summer.

ty. Upon discovering the lake level was dropping, he went to the scientific literature to find out about the species that might be threatened, and found that research on Mono Lake was extremely scant.

Learning of the problem, students from Stanford, University of California at Davis and several other schools secured a National Science Foundation grant to make an ecological study of the lake during the summer of 1976. Their work indicated that the lake was a remarkable product of nature. Generally, any environment that contains a large number of living things also contains a large number of species. Mono contains very few species—but these few are abundant. There are billions of brine flies and shrimp, and they support, during the course of a spring and summer, at least a million breeding and migratory birds.

Having established that there was much to lose at Mono Lake, the question became how to avoid losing it. Early in 1978, Gaines joined with several others to form the Mono Lake Committee. They see their goal as educational: to let people know about Mono Lake so they can decide for themselves what degree of protection it deserves. Toward this end they put out newsletters, run free nature tours at the lake, sell T-shirts and bumper stickers to spread the word and raise money, and operate the Mono Lake Information Center in Lee Vining.

Gaines has been chairman of the Mono Lake Committee since its formation. "The first thing I did," he recalls, "was to talk with every Audubon chapter in California." Audubon members were interested, and the National Audubon Society, joined by the Mono Lake Committee, Friends of the Earth and others, soon filed a suit against the LADWP to keep it from destroying a public resource. The LADWP has filed a cross complaint, and the whole case is likely to spend years in the courts.

Other efforts have also been made in California on behalf of Mono Lake. Five months before the first suit was filed, at the end of 1978, the California Department of Water Resources put together a task force "to develop and recommend a plan of action to preserve and protect the natural resources of the Mono Basin." Included were representatives from the California Departments of Water Resources and Fish and Game; the U.S. Forest and Fish and Wildlife Services, and Bureau of Land Management; the Mono County government; and LADWP. In 1979, the task force recommended that Los Angeles curtail its diversions of Mono Basin water by 85 percent in order to allow the lake's level to rise. It concluded that if the city conserved as much as it had during the drought of 1976-77 (15 percent of its predrought use), and reclaimed waste water, Mono's water wouldn't be needed. While it is true that the water generates electricity on its way downhill to L.A., the report estimated that the net per capita cost of replacing that power and doing everything else the plan required would be only 54 cents.

David Gaines and Sally Judy field questions at Mono Lake Committee information center in Lee Vining.

No long-term commitments to date

The LADWP did not accept the task force's recommendations (in fact, the report itself was opposed by one member of the task force—the LADWP representative). California State Assemblyman Norman Waters, whose district includes Mono County, was more receptive. In January, Waters introduced a bill that would have made the recommendation into law. But Los Angeles opposed the bill, and it was killed.

So far, no one has made a long-term commitment to do anything for Mono Lake except study it. More than a dozen scientists, including two PhD candidates who came as undergraduates in 1976, are currently involved. Studies of the California gulls by David Winkler, one of the original undergraduates, have attracted much attention.

On windy days, dry mud and salts where shoreline has receded swirl in huge clouds toward the east.

In 1976, 1977 and 1978, Winkler and colleagues found some 33,000 gulls nesting on Negit Island, the second-largest island in the lake. They also found the lake level dropping so far that Negit was becoming the tip of a peninsula, across which coyotes could walk to reach the nests. That seemed a simple, physical problem, inviting a simple, physical solution: the California National Guard tried in both 1978 and 1979 to blast a channel between the island and the mainland. The Guard's blasting didn't work, and during the breeding season of 1979, no gulls nested successfully on Negit.

Before the 1980 breeding season began, the California Department of Fish and Game installed another physical solution: a $66,000 chain-link fence that completely blocked off the peninsula, stretching from the water on one side of it to the water on the other. The fence worked partially—it did keep coyotes off the island. But although a great many gulls were seen on Negit this spring, raising hopes that they were nesting there, a bird census taken on July 7th turned up only ten nesting birds. An estimated 40,000 had laid eggs on smaller islands.

The LADWP's northern district engineer, Jim Wickser, and an LADWP range and wildlife specialist, Dave Babb, suggest that the gulls' move from Negit to smaller islands demonstrates their flexibility and resilience, and bodes well for their long-term survival. Gaines agrees with this to an extent, but suggests that even if the gulls keep finding safe islands, their chicks may be the first birds at Mono Lake to fall prey to the increasing salinity.

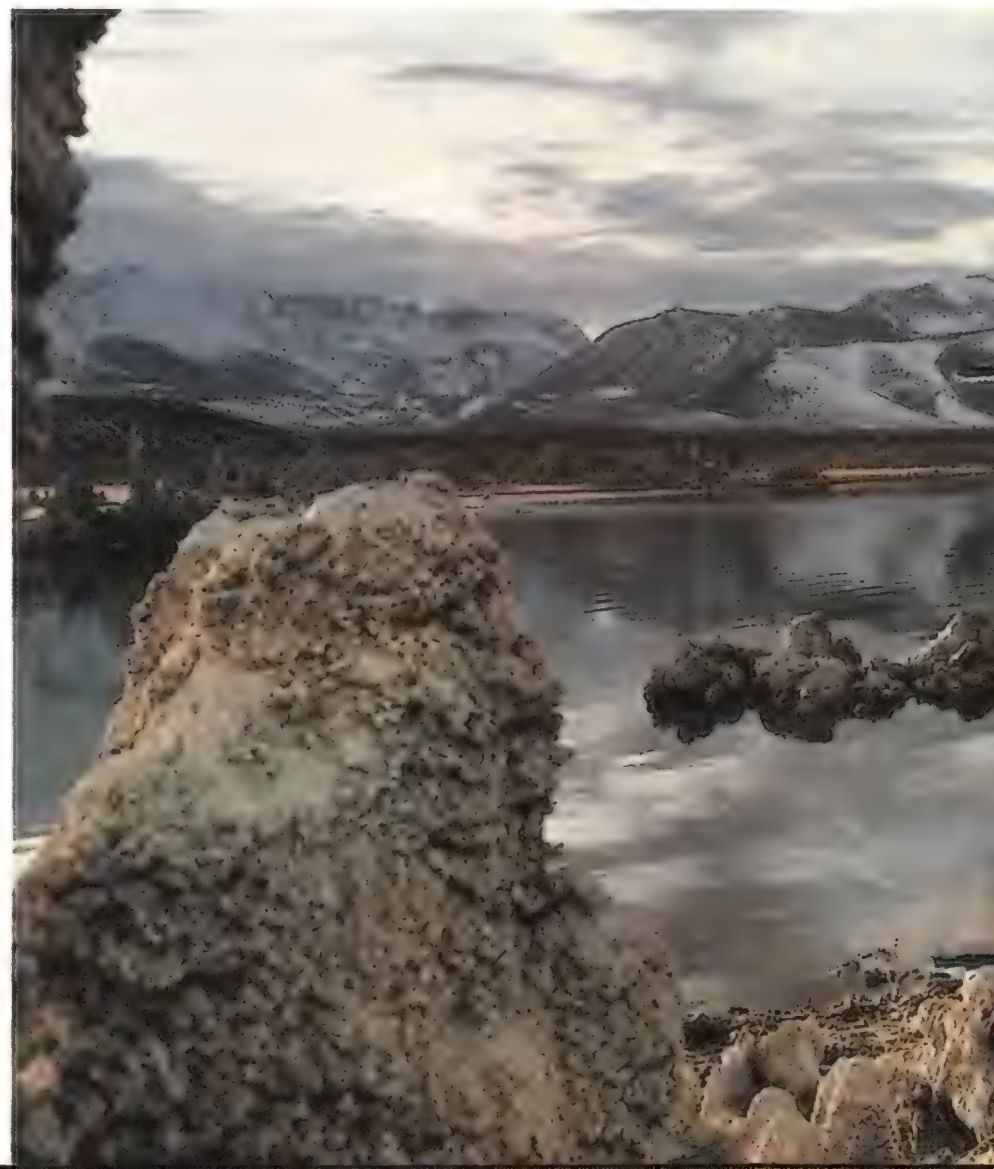
David Herbst, a biologist at Oregon State University who has studied both brine flies and brine shrimp at the lake, predicts that when the salinity of the lake has doubled (which at the present water-diversion rate would happen in 20 to 25 years), the threshold of salt tolerance for both the brine shrimp and brine flies would be reached.

Should the invertebrates actually disappear, the birds might follow them in a single season. Discussing the phalaropes, Gaines says that "birds carry little maps in their heads. Nobody's going to go up north and tell them, 'There's not anything to eat at Mono Lake for the first time in 700,000 years.' One year the birds will arrive and there won't be any food and they'll just die."

Faced with a choice between birds and human welfare, Gaines would not choose birds. "If it could be established that that water was essential for human beings," he says, "I wouldn't be trying to save Mono Lake." But he doesn't believe the water is essential at all. He grew up in Los Angeles, and all his life he has seen people there living as though they had all the water in the world, even using hoses to wash fallen leaves off their driveways. He considers it perfectly reasonable to ask them to conserve enough to keep Mono Lake alive.

Wickser disagrees. He doesn't believe that much water can be saved. "People responded very well to pleas for conservation during the drought of 1976-77," he says, "but in a time of plenty, it's hard to get people

In the raking light of dawn, Mono Lake looks stark and surrealistic, suggesting to some a "dead sea,"



to conserve." A time of plenty? When Los Angeles must import its water from hundreds of miles away, and there are competing uses for all the water it imports? When pressed, Wickser readily concedes that what he's talking about is not plenty so much as a perception of plenty. "In general," he says, "California has more people than resources, but since no one is going to kick the people out, the resources must be provided."

Actually, he says, there may be water in other parts of the state that could replace Mono Basin supplies, but acquiring it would be politically difficult. Mono Lake Committee people talk about L.A.'s unused share of water from the California Water Project—the massive aqueduct system that carries water from the northern part of the state to the populous south—but at this point, Wickser maintains, it would be difficult if not impossible to get that water because other people are already using it, and one cannot easily collect water on which other people have come to depend.

The story might be different, Wickser suggests, if the capacity of the California Water Project were increased by the construction of the Peripheral Canal, which would carry water from the Sacramento River into the existing aqueduct system. L.A.'s share of that new water would more than make up for what it gets from the Mono Basin. But the canal is very controversial because it would sharply reduce the amount of fresh water flowing into the Sacramento delta, where farmers, wildlife and seagoing ships all use it. The plan to build it has passed the California legislature but now has to be considered in a statewide referendum.

Encrusted with salt, a dead gull lies decaying on land bridge between Negit Island and shore.

but in fact its immense productivity of algae, brine flies and shrimp permits huge bird population.

Even if water were piped to Los Angeles from the Sacramento River or any other plausible new source, Wickser says, it would not descend to L.A. from the height of the Mono Basin and would therefore not generate as much electrical power on the way. LADWP has found that each acre-foot of Mono water generates power equal to five barrels of oil on its way to L.A., while an acre-foot of California Water Project water involves consuming the equivalent of five barrels of oil for pumping, and an acre-foot of Colorado River water consumes the equivalent of three.

According to Wickser, replacing the electricity that would be lost if 85 percent of Mono Basin water were cut off—the equivalent of 425,000 barrels of oil a year—would cost much more than the task force's estimate of 54 cents, and he doesn't see why the LADWP's "three-and-a-half million ratepayers" should have to foot the bill.

Wickser makes that point emphatically, but he doesn't want to seem too hard-nosed. As he and Babb prepare to leave he says, "Dave and I hate it that Mono Lake is shrinking, but I think the trade-off is worth it, at least until we learn something new. That may sound cold and heartless, but that's the way it is."

Needless to say, the Mono Lake Committee views the trade-off differently. It is trying very hard to persuade people—especially those in Los Angeles—that the lake is worth paying a price for. On the front of

every T-shirt the committee sells is a picture of the lake with tufa jutting up in the foreground, a gull flying overhead, and the words: "Mono Lake. It's worth saving."

Red Nichols, who runs the brine shrimp operation, doubts that many people have been convinced. It would be different, he says, if there were trout in the lake. Americans value trout. But a lake without trout is hard to sell.

Lake Crowley, south of Mono, the largest single reservoir in the Los Angeles aqueduct system, has trout. An LADWP booklet advertises Crowley as "one of the most popular freshwater fisheries in California," a place that "attracts thousands of anglers each spring, signaling the opening of another High Sierra trout season. More than 11,000 anglers have fished this well-known trout lake on opening days." Lake Crowley, fed largely by water from the Mono Basin, has been there for 40 years. Mono Lake has been there for at least 700,000. But nobody fishes Mono Lake on opening day.

When Gaines is asked about Nichols' trout hypothesis, he begins by rejecting it—"there are lots of lakes with trout"—but on reflection he concedes that "for now, I guess maybe you're right." At this point, perhaps, people do value trout more than brine shrimp, more than the opportunity to study an ecological community that has huge populations of few species. Looking ahead, though, Gaines argues: "I think someday, when the lake has either been saved or lost, people will look back and think it was a lot more valuable than a lake with trout."

Stripped of their underwater envelope, tufa towers confront world like silent sentinels.

By John Canaday

The private world of illuminations opens up its doors

The new slide program of the Morgan Library now makes rare masterworks of medieval manuscript painting available to everyone

In the Pierpont Morgan Library in New York, a book gloriously bound in gold covers studded with jewels bears the proud catalog number M.1—Manuscript One. This is singularly appropriate because this particular book was the first major acquisition—in 1899—in the formation of a collection that now goes up to M.1023. But M.1, the *Lindau Gospels*, still holds a claim to the title of First Manuscript on more than a seniority basis against strong competition in what became the finest collection of medieval and Renaissance manuscripts on the American continent, and one of the four or five finest anywhere. By the standards that combine to determine quality—rarity, historical importance and sheer beauty as works of art—the front and back covers of the ninth-century *Lindau Gospels*, written in St. Gall, Switzerland, make it one of the great manuscripts of the world.

The enjoyment of manuscripts, traditionally an elitist pleasure for connoisseurs who could afford to commission or collect them, has perforce remained elitist even during this century when the great private collections have become public property and museum going has become a form of mass entertainment. Manuscript pages are too vulnerable for exhibition under any but the most rigidly controlled conditions of light, temperature and humidity (and then only briefly), and too small to be examined at close range (as they have to be) by more than two or three people at a time. As a result, manuscripts remain virtually unknown except to a very small percentage of today's vastly enlarged art audience.

The circumstances that isolate manuscripts from their potential audience are not easily overcome, but the Morgan Library has ventured on a program that should come as close as anything can come to putting the finest pages from its collection, along with some of the covers, directly into the hands of students, specialists and the public. Color transparencies are of course stock equipment in art education, but the library's new set of 1,200 slides, including all the miniatures from some of the most important manuscripts, is extraordinary in the specialization of the subject matter and the veracity and clarity of the images. The close-range details have to be called breathtaking as revelations of a form of painting whose importance and beauty have been in inverse ratio to the public's awareness of it.

In a university or museum equipped with the transparencies that the library is making available, it will be possible to sit in the back row of an auditorium and, in effect, turn the pages of otherwise inaccessible manuscripts one after another, and to examine, in detail, as one example, the intricacies of the back cover of the *Lindau Gospels* as if with a magnifying glass.

Some of the most important developments in the social and cultural history of the world leave historians groping to deduce explanations after the fact. The back cover of the *Lindau Gospels* is directly related to one of these, which occurred when the ascetic, vigorous, and proselytizing Celtic monks in Ireland (SMITHSONIAN, October 1977) assumed the spiritual leadership of Europe and, with attendant development in painting, created between A.D. 600 and 800 the first Golden Age of medieval art. In the scriptoria (writing rooms for copying and illuminating) of their monasteries at home and the ones they founded in Saxon England, they transformed pagan barbarian art into as brilliant a school of Christian manuscript illumination as the world has ever seen.

On the back cover of the *Lindau Gospels*, when the maze of intertwined forms that fill the areas between the arms of the Cross is explored, it reveals a multitude of miniature dragon- or serpentlike beasts. Each one can be traced from head to tail as an entity, an in-

The *Lindau Gospels*' back cover is a barbaric pattern transformed into a Christian Cross design of genius.

Art critic and author, most recently of What is Art?, *John Canaday wrote about Edward Hopper in the September 1980 issue. A new edition of his standard work,* Mainstreams of Modern Art, *is to be published this month.*

Berthold Missal cover is the most important German Romanesque manuscript in United States. It was made at Weingarten Abbey, Germany, c. 1200-1232.

Nativity leaf from a Florentine Gradual is from second half of 14th century, by Silvestro dei Gherarducci.

dependent unit that could be extricated intact, and all are played against the counterpoint of a second interlace of vinelike tendrils sharing the basic structural motif of repetitions and reversals of the sinuous bodies. The four fields are silver-gilt plaques in relief, embellished with stones.

The four busts of Christ on the arms of the Cross and some passages of the border are enamel. For the rest, it does not take a very sharp eye to notice that the consistency and logic of the design are interrupted by the miniature sculptures in low relief (attractive enough in themselves) representing the four Evangelists, set into the corners. These are some 800 years later in date, having been added in the late 16th century when front cover, back cover and text were assembled from different sources into the single book now called the *Lindau Gospels*.

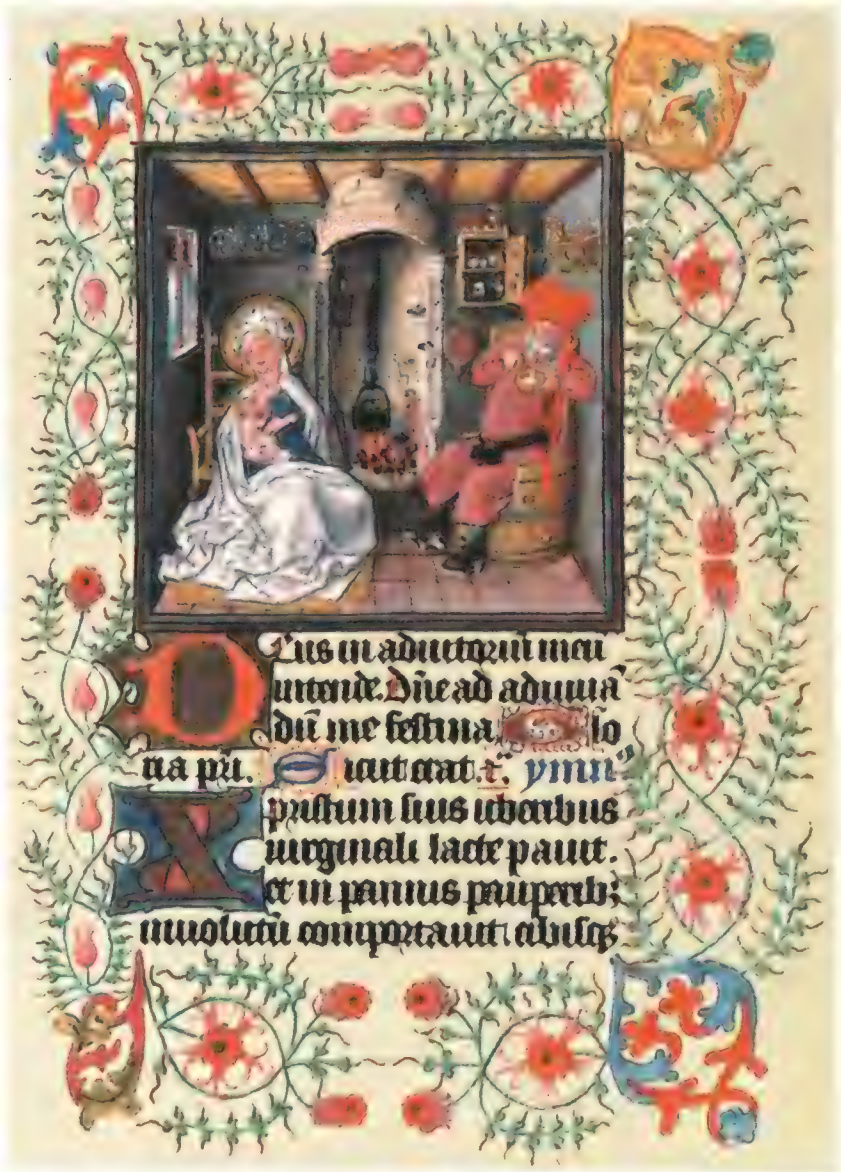
None of this, however, explains the presence of dragons as a conspicuous motif in a work of Christian art. Actually, they are the offspring of pagan dragons that appeared on ship prows and elsewhere in bar-

A calendar miniature from the *Da Costa Hours*, celebrating month of May, was painted in Bruges.

barian art. The subjugation of the little monsters within the symbol of the Cross can be seen as a reference to the power of the Church to triumph over evil and confusion. And for the missionary monks in still half-pagan Ireland, the transfiguration of barbarian forms must have symbolized triumphant conversion, a saving of souls.

Transfigured or not, the barbarian art indigenous to northern Europe was out of key with Charlemagne's program for reviving the arts of classical antiquity on his home ground. The *Lindau* back cover, which could have been done in the very year of Charlemagne's coronation as Emperor of the West—the year 800—is proof enough that the good man's heroic efforts to stamp out the insular style had so far not been altogether effective. But the front cover (SMITHSONIAN, September 1979), executed about 70 years later in the workshops of his grandson, Charles the Bald, shows how successful those efforts had finally become. The figure of Christ crucified could never be confused with a truly classical example, even the most provincial, but there is a determined effort on the part of this sculptor to construct both body and head in realistic proportions and to model them with classical breadth. In contrast, the halo, for which there was no classical precedent, is designed in wiry complications reminded of those on the back cover. As the finest surviving Carolingian cover with goldsmith's work to have survived, the front cover of the *Lindau Gospels* has only one rival, the *Codex Aureus* in Munich, and alone is enough to assure Charles the Bald a position of honor in the history of art patronage, whatever his deficiencies as a ruler.

In the hazy area of half-awareness as to what manuscripts are all about, there is a general misconception that their illuminations—the illustrations and designs that embellish the texts—are interesting primarily because they are miniatures. It is true that by definition the pictorial illuminations usually are miniatures, and the term is a valid one in art glossaries to distinguish the pictures from the decorative schemes around them, but "miniatures" is a word with unfortunate connotations. There is about it a suggestion of reduc-



A leaf from the *Hours of Catherine of Cleves*, c. 1440, the most important of the Dutch Hours known to date, depicts Holy Family in domestic surroundings.

tion of content along with reduction in size, the substitution of preciousness for the forcefulness of the full-scale paintings that miniatures, supposedly, reflect.

Actually, it was the other way around during the great centuries of manuscript illumination, the Middle Ages. Illuminations were not the echoes but the genesis of panel paintings, frescoes and even monumental sculpture. The Holy Trinity illustrated here (p. 54) from another Morgan treasure, the *Berthold Missal,* belongs stylistically to a school of manuscript painting that goes back to Byzantine sources and in turn provided the source for wall-size frescoes in early medieval churches and the schemes for sculptured portals, where the sculptor's chisel laboriously reproduced the fluent lines of the illuminator's brush.

Manuscript illuminators who invested standard subjects with new spiritual and intellectual force were the single most potent factor in the growth and dissemination of early medieval art. In our picture-glutted age, when a photograph taken on the moon can be in print by the hundreds of thousands of copies around the world before the day is over, it is difficult to imagine a time when the only means of reproducing pictures was to copy them by hand, and the only way to get them from one place to another was to carry them. Manuscripts were easily portable, and it was through their illuminations that new styles and new concepts in painting were exchanged across medieval Europe and England.

Within their small format, illuminations concentrate the entire range of medieval expression, from passionate mysticism to delight in the secular world. Their subject matter includes Biblical themes of all kinds, philosophical and theological commentaries, lives of the saints, classical texts, histories, chronicles, fables, legends, poetry, music, and that fascinating blend of analytical observation and fantastic imagination that passed for science in tracts on astrology, astronomy, medicine and zoology.

Even in the earliest manuscripts, at a time when illuminators were regarded (and apparently regarded themselves) primarily as craftsmen rather than creative artists, we now recognize the hands of master stylists like the one called the Master of the Berthold Missal, and those of daring innovators whose powers of invention and expression make the history of manuscript illumination as eventful as the story of modern art. The anonymous monk who, at some date between 845 and 882 in Reims, painted the four Evangelists in a Gospels that the Morgan Library calls its finest Carolingian manuscript was working in a revolutionary style that had appeared early in the ninth century but is comparable in its expressive devices to Vincent van Gogh's a thousand years later.

Today, safe within their covers, never exposed to the light and dirt that fade, darken and discolor paintings hung or painted on walls, protected from the even more damaging disfigurements of repainting and careless restoration over the centuries, not to mention vandalism, neglect and all the other forces of destruction and decay that beset works of art, medieval illuminations remain the truest record of the painting of their time. It is probably safe to say that no other body of the art of a period before the 18th century, not even that of the Italian Renaissance, exists in comparably pristine condition.

Illuminating the life of David

For a wide audience, the enjoyment of manuscript illuminations need be only as specialized as the individual wants to make it, once the art itself is available. Scholars delight in tracing influences, identifying bodies of work by masters whose names are lost, reconstructing the circumstances under which this or that manuscript was copied or commissioned. It is a great field for scholarly detective work. The Morgan's M.619 (left) is a single sheet (which the library modestly calls the *Winchester Leaf,* although it is widely known outside the library as the *Morgan Leaf*) that has been analyzed bit by bit, virtually brushstroke by brushstroke, for its art-historical importance. It is also a painting that can do today exactly what the artist wanted it to do when it was painted sometime during the last quarter of the 12th century: tell a great story in a way that combines vivid narrative with superb esthetic effect.

The *Morgan Leaf* illustrates five episodes from the life of David, the most dramatic life in Old Testament history, and presents them more as an adventure story than as a religious tract.

First we see the youthful David encountering the giant Goliath (so enormous that he bursts through the ornamental border of the page). David next decapitates his colossal opponent while the enemy hosts flee, looking back in amazement toward the stripling who has routed them. In the next bank David entrances Saul with the music of his harp, and is elevated to be successor. In the final scenes, in the lowest bank, the Master of the Morgan Leaf reaches his apogee as a storyteller in his account of the death of Absalom.

Absalom, fleeing after an unsuccessful plot to dethrone his father, is killed by his pursuers when his hair catches in the branches of a tree. We see this and, conjoined, the scene where David, given the news,

Winchester Leaf, a magnificent example of English 12th-century art, was created at St. Swithin's Priory.

cries the words, "Absalom, Absalom, my son Absalom," and attempts to hide his grief in the folds of his cloak.

In the rendition of these scenes, so dramatic, so emotionalized, there is a strong technical residue of the old hieratic style, in which forms were compartmented within strong outlines. But in the old style we would have been told, "The King hides his face in grief," and the gesture would have been objectively reported; we would not have participated vicariously in that grief as we do with this illuminator who tells the story as a human drama—as, indeed, it is told in the Biblical texts. We have reached the dividing line between the early medieval period, called Romanesque, and Gothic, when celestial mysteries and earthly experience became mutually complementary.

The hand of the same illuminator is recognizable in other important English manuscript pages, but the *Morgan Leaf* seems to have been begun by a more conservative Romanesque artist, then completed by this adventurous, nearly Gothic master. This explains stylistic inconsistencies of the kind evident in the contrast between the scenes in the middle bank and those at the top. The figure of the boy David in the opening scene is conceived so fully in the round, occupying space so convincingly, moving with space untrammeled by the rigidity of the linear style, that the tiny figure hints that the artist was thinking at large scale within the limited dimensions of a page. By this inherent evidence, the Master of the Morgan Leaf is sometimes thought to have been a muralist as well as an illuminator, and certain wall paintings of a later date have been attributed to him.

Now we have a symptom of the reversal by which illuminations were to conclude their history by following the lead of panel paintings and frescoes, instead of supplying models for them. The miniature held within the initial *P* in the library's splendid page from a 14th-century Gradual (p. 54), a book of music for the Mass, is clearly by a Giottesque painter (his name is known: Silvestro dei Gherarducci) who does his charming best, and very charming it is, to emulate the revolutionary realism of Giotto's frescoes in Padua and Florence. From this point on, the story of manuscript illumination as a summary of the history of painting continues along lines already familiar on museum walls, although it is still true in many cases that the illuminations are far and away better preserved than their contemporaries among panel paintings and frescoes.

With the waning of the Age of Faith, subject matter becomes increasingly secular in spirit even when nominally religious. Near the top of any list of illuminations in this spirit is a recent acquisition at the Morgan, the exquisite *Hours of Catherine of Cleves*, done about 1440 and without question the single most important and original Dutch *Horae* to have survived. On page after wonderful page the miniatures reflect the Northern fusion of Renaissance realism with late Gothic spirituality, which refused to recognize any conflict between the everyday world and the world of miracle. In a scene of the Holy Family at supper (p. 55) from the Cleves *Hours*, the artist gives the Virgin a halo and a more elaborate costume than a Dutch housewife would wear under the circumstances, but Joseph, in his usual supporting role and busy with his porridge, is as unidealized as are the minutely detailed objects in this comfortable Dutch interior.

Collecting beautiful things

In 15th- and 16th-century Europe, collecting—whether of exotic wild animals, mineral specimens, fragments of antique art, preserved biological freaks or manuscripts—became a fervent avocation and a status symbol among members of the wealthy aristocratic and highly cultivated ruling class. With the increase in panel paintings, miniatures began to be interesting as miniatures, with a premium on exquisite execution. Miniatures in prayer books took on connotations of expensive indulgence in beautiful things, like perfectly cut jewels. The *Da Costa Hours*, done in Bruges about 1515 for a member of the Portuguese royal family, includes a delectable calendar of the occupations of the months in which the most enchanting of all is the *Month of May* (p. 55), devoted to amorous dalliance of the most refined nature. The Gothic conception of the occupations of the months on Earth was tied to a divine universal program designed to assure us that our smallest daily chores are part of a preordained celestial scheme by which the soul ultimately attains Paradise; the Da Costa *Month of May* exchanges the uncertainties of the future for the im-

mediate paradise of a small boating party on a canal.

As the spectacular final scene in its self-contained history of manuscripts, the Morgan Library owns the last great Italian example, a Book of Hours done for Cardinal Alessandro Farnese. The Cardinal's Book of Hours was finished in 1546 and signed by Giulio Clovio; one of the pages (below) shows the Fall of Man with vignettes above and below of the Creation of Eve and the Expulsion, with ornamental figures of cupids and nudes, male and female, inhabiting a profusion of architectural elements in a design that would in no way be inflated if enlarged to the dimensions of a large tapestry, and is technically amazing at the size of a page in a book.

The *Farnese Hours,* aside from its terminal position in the history of illumination, is a masterpiece of Mannerist style—or one of the various Mannerist styles—that filled the gap between the moment of balance called the High Renaissance and the creative explosion called the Baroque. Giorgio Vasari, a Mannerist himself as well as the first art critic and historian, dubbed Giulio Clovio "a new if smaller Michelangelo of our time" on the basis of this manuscript, which was nine years in the making. That it took Michelangelo only four years to paint the Sistine Ceiling from which some of these miniatures, for all their fantastic affectations, are derived, perhaps says something about the difference between genius and the assiduous application of talent; but if we remember the standards set for determining the quality of a manuscript—rarity, historical importance, and sheer beauty as a work of art—the *Farnese Hours* scores high.

Two story-telling pages from the Book of Hours of Cardinal Alessandro Farnese. Completed in 1546 by Giulio Clovio, it is considered the finest Mannerist example in the Morgan Collection.

By Hara Estroff Marano

Biology is one key to the bonding of mothers and babies

Pediatricians and behavioral scientists are discovering that infants come equipped with an amazing array of 'social skills'

Pink and plump, the infant shrieks his discomfort to the world he entered less than 48 hours before. Pediatrician T. Berry Brazelton materializes at one side of the wailing, flailing infant, and lowers his head to its level. "Hi there," he croons. "Can you turn over here if I talk to you?" The baby turns his head to the voice, seems to search for its source, and stops crying.

With this simple demonstration (although this youngster may be exceptionally responsive), Dr. Brazelton contradicts the old idea that babies can neither see nor hear at birth. He also dramatizes a major discovery about human development. It is a discovery only in the sense that science is beginning to recognize what sensitive mothers have suspected all along—that newborns come highly equipped for their first intense meetings with their parents, and in particular their mothers.

At birth, Dr. Brazelton and others have found, not only do many babies orient themselves to sound, they prefer the sound of the human voice, especially the high pitch of the female voice. They choose to look at faces over other objects and will follow with their eyes the turning of a nearby human face. They may imitate facial gestures such as sticking out a tongue, and they synchronize their body movements to the rhythm of the human voice.

Unable to cling to the fur of a highly mobile mother (as do monkeys), the human infant depends for all of its early needs on the strength of its mother's emotional attachment. How mother and infant become

Classic portrait of mother and child, which appears in *The Family of Man*, reflects a step in bonding

emotionally attached—some call it bonded—to each other is a subject of serious investigation by growing numbers of psychologists, psychiatrists and pediatricians in the United States. The current wave of interest began building about 15 years ago, as technological gains dramatically improved premature babies' chances of survival.

Drs. Marshall Klaus and John Kennell at Rainbow Babies' and Children's Hospital in Cleveland, and

process. Mothers left with their newborn infants arrange themselves in eye-to-eye contact with babies.

others who run the intensive-care nurseries that sprang up to treat premature infants, made a startling observation. They found that in spite of their near-heroic measures to save tiny premature infants, a disproportionate number of them wound up back in hospital emergency rooms, battered and abused by their parents, even though they had been sent home intact and thriving. One of the contributing factors seemed to them to be the prolonged separation of mothers and infants which was then routine following premature births. Such separations can sometimes interfere with the bond that usually forms under more natural circumstances, Drs. Klaus and Kennell believe.

Getting a handle on this bond was not easy, Dr. Klaus now admits. He first had to overcome the limitations of his training as a pediatrician. "It took me some time to turn my eyes from the baby to the mother; only then did I fully realize that the mother

A nurse-midwife shows Claire to her mother 30 seconds after birth, as father adjusts a pillow. Infants born to unmedicated mothers are highly alert, often spend much of first hour of life in a state of rapt attention.

is the instrument through which the baby can thrive."

Nor is the problem limited to premature babies. Reports of child abuse and neglect are increasingly common. According to the National Center for Child Abuse, three of every hundred infants need medical attention for injuries suffered at the hands of parents. Then there are the subtler forms of abuse—neglect and growth failure without organic cause—that do not always find their way to hospitals or headlines. In addition, there is the growing sense that the ability to cope and handle stress is acquired through the parent-infant relationship.

Among those who are probing mother-infant bonds, some researchers adopt for their models monkeys and other animals, both in the wild and in the laboratory; but while mother-infant attachment occurs in many animals as well as humans, bonding in humans occurs in a very specific and complex way. Other investigators comb through the family histories of children for whom such bonds failed to develop. Still others chronicle the actions of normal mothers and children going about their daily routines at home, or observe them in special laboratories set up to film them during brief separations and reunions.

But all are aimed at gathering information to help improve the relations between parents and children in the United States. Taken together, their work constitutes the first major attempt to analyze scientifically what is often seen only through rose-colored glasses, if at all—how human relationships develop.

Dr. Brazelton is one of the numerous investigators parsing the relationship between mothers and infants and between fathers and infants as well. His observa-

Hara Estroff Marano is a staff editor for Medical World News *and the mother of two young children.*

Claire, at three, is embraced by mother. Such maternal attention may lower stress for both child and parent.

tions at Harvard and at Boston Children's Hospital lead him to believe that a mother's emotional attachment to her infant does not descend on her by some obstetrical deus ex machina in the delivery room. It develops gradually, beginning in the feelings and dreams many women experience about themselves and their unborn babies during pregnancy.

Anxiety and disruption of old concepts through dreams, Dr. Brazelton thinks, may become part of a normal process, an "unwiring" of all the old connections to be ready for the new role. Prenatal anxiety whips up the energy a woman needs for greeting the individuality of the new baby. Evidence is amassing that as she does so, she is responding to the hormonal signals guiding her pregnancy to a close.

Evolutionary biologists, who take a long-range view of human behavior, see parenting as much too important to be left to whimsy. They hold that behavior that is so critical to the survival of both individuals and the species must have some biologic base, must somehow be wired into the nerve circuits of the brain. This notion strikes a strong chord with one of the emerging themes of modern neuroscience—that behavior has more innate components than most of us have been led to believe.

Most of the evidence supporting the idea of a "biologic base" comes from experiments with rats and sheep. As science proceeds by the careful building of inferences, scientists look to such animals for clues to what might be going on in humans. Not that we, like the experimental rat, are held in hormonal thrall. But the rigorous experiments that are possible with animals can lead to new insights, confirmed by close observation of human behavior. In looking at the earliest stages of maternal attachment in rats, Drs. Jay Rosenblatt and Harold Siegel of Rutgers University have discovered two distinct phases, a hormonally triggered burst of interest followed by a more psychologically based need for continued contact.

Hormones may trigger mothering in animals

About a day before mother rats give birth (ten days before birth in sheep and three weeks before birth in humans) their hormonal status changes dramatically. The blood level of progesterone, the hormone that sustains pregnancy by keeping the laden uterus quiescent, declines sharply, and the level of estrogen rises. The main point of his work, Dr. Rosenblatt says, is to show that "the onset of maternal behavior before delivery is based on this rise in estrogen." An animal facing a litter of pups, as young rats are called, before the change, stays as far away from them as possible. So do virgin rats. If, however, the virgins are caged with pups, left with them day in and out, then they become maternal toward them after four to seven days, and the smaller the cage, the faster it happens. That can be contrived in a laboratory, where it is possible to remove the litter each day and give them needed care while substituting a fresh batch of age-mates. But in real life, such animals would be dead within 48 hours. Yet when a virgin rat is given a transfusion of blood from a new mother, she becomes maternal within ten to 14 hours. She will preside over the litter as if it were her own. Although she cannot lactate, she assumes the nursing position, crouching over her pups. She will do all in her power to keep the pups close, retrieve them when they stray. Blood taken from animals before the hormonal shift, or more than 24 hours after birth, has no effect on her.

"We know," says Dr. Rosenblatt, "that without the hormones, the rats' initial aversion to pups is a fear of them. It appears to be part of a basic fearfulness of

Nathaniel, at six weeks, reaches out in what has been called a "mating dance" between mother and child.

anything new. And little pups are certainly something new and novel for them."

The hormones, he says, reduce the fearfulness. "They tip the balance of responding to the young, making the mother ignore or overcome the unattractive features." In essence, he says, the hormones change the animals' motivation. "Of all the stimuli a mother faces, she selects certain ones to attend to. Of all the things she can do, she does only certain things. If, before a rat gives birth, we offer her a baby and a piece of food, she chooses the food. Right after birth, she chooses the baby. That is a motivational shift."

Because all rats—virgins and even males, as well as new mothers—become maternal if given enough time with pups, Dr. Rosenblatt concludes that all rats share the neural system that underlies maternal behavior. He thinks the same is probably true of primates. Among the colony of rhesus monkeys at the Rutgers Institute of Animal Behavior, which he heads, it is not uncommon for a never-pregnant animal to adopt a baby. "Like the rat, rhesus monkeys have some inherent capacity to be maternal. But that doesn't mean there's no physiologic basis for it." Unfortunately, he notes, no one is testing hormones in monkeys.

Closeness keeps mothers maternal

Rosenblatt's rat studies show that hormones trigger a maternal response, but also that hormones don't keep the animals responsive. Only the pups themselves do that. A certain amount of close contact with the pups shortly after birth is needed for the mother to maintain the responsiveness that the hormones activated. If a rat gives birth but isn't allowed any contact with her litter, but is given her pups back later, she won't be maternal toward them. It will take her about a week to overcome her resistance to them, as if she had never been pregnant. But if a new mother is allowed several hours of contact with her new litter before they are removed, she will still be highly maternal if they are given back days or even weeks later.

Do Rosenblatt's studies throw any light on observations of human mothers and infants? Shortly after Klaus and Kennell suspected that mother-infant separation might be partly responsible for the unusually high rate of battering among premature babies, they opened the doors of the premature nursery to mothers, although in taking such a radical step they had no proof that what they were doing was safe or even helpful. Indeed, the medical canons of the era held that the mothers could contaminate their babies. (Dr. Klaus, with Drs. Cliff Barnet, Herbert Leiderman and Rose Grobstein of Stanford University, demonstrated that the infection rate didn't change in preemie nurseries after mothers were let in.)

Invariably, the mothers approached their infants with a substantial amount of residual fear, as if precipitous birth had cut short their hormonal and psychological ripening. At first, they stalked the incubators, circling them for one to two visits; eventually, they would make an approach, poking their babies with their fingertips. Finally, they stroked their babies' arms and legs, moving, after four to eight visits, from the extremities to the babies' trunk—something mothers of full-term infants do exuberantly within minutes of greeting their babies, provided they are afforded the privacy and emotional support for a "rendezvous."

This period of rendezvous after normal births, which Rosenblatt's studies suggest is important, has been commonly overlooked in American obstetrical practice. Seen with the cool eye of clinical observation, what develops between mothers and babies who are permitted close contact after birth is a sort of "mating dance," an elaborate courtship in which, ideally, they link their behavior through every available channel of communication into a smooth pattern of signal and response.

A high state of alertness in both mother and infant is helpful in getting things rolling. Not only does the infant come headlong into the world unfurling such a repertoire of social skills that those who notice them are apt to refer to "the amazing newborn," but babies born to unmedicated mothers have an incredible capacity for alertness in the first hours after birth. Newborns, says Dr. Klaus, spend nearly 40 minutes of their first hour on Earth in a state of rapt attention. During this time, their eyes are shiny-bright, wide open, and capable of focusing and fixating on objects. During this state of high alertness newborns will follow with their eyes and head a slowly moving object, especially a face. This prolonged alertness, says the Cleveland pediatrician, "is especially suited for meeting parents. It often fosters parental feeling and a sense of ecstasy in parents."

In humans, it's love at first sight

It is the visual attentiveness that seems to matter most to parents. When mothers talk to their babies just after birth, 80 percent of what they say is related to eyes. "Please open your eyes. If you open your eyes I'll know you're alive," is a phrase Dr. Klaus has heard many times. Most striking, when mothers are put together with their babies, they shift around to arrange themselves *en face* with their infants—that is, they align themselves so that their eyes and the babies' eyes are in the same plane of rotation. In doing so, mothers seem to be searching for a signal. "A mother can't easily become bonded to her infant unless the baby responds to her in some manner," explains Dr. Klaus,

Nathaniel, now five, and his mother rub noses in continuation of synchrony that bonding produces.

who restates his observation as possibly one of the basic principles of bonding: "You can't love a dishrag."

Giving flesh to Yeats' declaration that "love comes in at the eye," mother and infant often move through a behavioral sequence which, Drs. Klaus and Kennell find, is not very different from what happens when a man and woman fall in love: mutual gazing, touching, fondling, nuzzling, kissing. Together, they fall into step with each other, their synchrony epitomized sometimes by a baby moving its head in rhythm to its mother's words.

Nothing better illustrates the interdependence of needs than the act of a mother breast-feeding her baby. There are both emotional and physical benefits, for mother and infant. Breast-fed infants, for example, have measurably fewer infections and develop fewer allergies than bottle-fed babies. "The most powerful way to forge a strong bond between mother and infant is through breast-feeding," says Dr. Kennell. "It continues the process begun early after birth. As a social exchange, it is rewarding for mother and baby over and over." His observations have convinced him that the more mothers and babies are together shortly after birth, the stronger is the attachment between them and the more natural mothering becomes. (At the same time, Dr. Klaus points out that it does not always happen instantly. He cites studies showing that about 25 percent of mothers "fall in love" with their babies before birth, from 25 to 30 percent in the first hours. For about 40 percent, it takes a week or even

longer.) So powerful is the early attachment that its effects on both mothers and babies are discernible years later.

Drs. Klaus and Kennell have demonstrated this experimentally, in their own pediatric bailiwick. "The hospitals served as a natural laboratory," says Klaus. "In America, where hospital separation is routine, most of us look separately at mothers and babies. Being together is biologic and natural. Separation is abnormal and frightening." They studied a group of mothers and babies who got routine care. For comparison, they followed another group of mothers and babies who were put in a warm room where they could lie together unclothed for an hour after birth and who were again together five more hours on each of the first three days after delivery.

Starting a month after birth and throughout the next five years—the study is still under way—the Cleveland pediatricians found important differences between the two groups of mothers and babies. A month after birth, when they came back for a special office visit, the early-contact mothers stood closer to their infants, picked up their crying babies more. During feedings (which were filmed), they more often stayed in the *en face* position and fondled their babies. Interviews revealed they were more reluctant to leave their infants with someone else. And they reported that when they did go out, they found themselves constantly thinking about the baby.

A year later, they still were more attentive to their babies during an uncomfortable office visit. They helped the pediatrician approach the reluctant babies. After two years, the early-contact mothers talked differently to their children from the control mothers, although there were no differences among the two groups of mothers that could account for such an observation—all were from the same socioeconomic class and scored about the same on I.Q. tests. Yet the early-contact mothers used richer language constructions and more words, especially descriptive adjectives. They issued fewer commands to their children but asked more questions. What is more, the early-contact mothers continued to speak to their children when other adults came into the room, while the control mothers talked more to the adult interviewer.

"The early-contact mothers presented a model of better learning," says Dr. Kennell. Their speech had more variety, more opportunity for response. "They gave more stimulation to the child's thinking. They seemed to be more aware of the needs of growing children. They could interpret the environment better to them.

"To think all that is the result of just 16 hours of being together in the first three days of life," sighs Dr. Kennell. "The hours after birth seem to comprise a sensitive period for maternal-infant attachment."

Early contact may reduce child abuse

At Nashville General Hospital, Dr. Susan O'Connor has found that, by putting mothers together with their babies during the hospital stay after birth, she can help a significant proportion of women to overcome some of the personal and cultural pulls that could lead them to neglect their infants. Dr. O'Connor, assistant professor of pediatrics at Vanderbilt University, feels that "this is an area of research that shows real promise." She cautions, however, that we must not "look upon it as the answer to all our problems." Indeed, none of the researchers feels early bonding solves all the problems of parenting. Nor do they believe that the lack of very early contact must preclude the forming of an affectionate bond. Dr. Klaus points out that adoptive mothers often do "a great job."

If the early falling in love is somewhat magical, coaxed out of a built-in bag of tricks, staying in love over the next months and years takes work. Even so, Harvard pediatrician Brazelton and Cornell University psychiatrist Daniel Stern see it, quite literally, as a form of child's play. They have recorded such play —in separate but similar studies—by videotaping several mothers and babies in face-to-face encounters, at home and in special laboratories, and later analyzing and reanalyzing the film. Both doctors find that mother-infant play is built on tiny advances and retreats, thrusts and parries, that go by too fast for most people to see what is happening but which sensitive mothers nevertheless apprehend. It has taken Dr. Brazelton as long as 28 hours to catch all there is to see in three minutes of film!

In the earliest stages, mother leads the game, reaching over to draw her baby out. Gradually, the baby

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Comforting gaze and gentle hands of mother make protective 'envelope' for two-day-old daughter, Maya.

At 11, Maya still depends on the maternal envelope. Early closeness stimulates ongoing close relationship.

essays a few smiles, throws out a few vocalizations, and starts up the game himself. He reaches out to get her, she brightens to his overtures, feeding him talk and facial expressions—the elements of communication—until, overloaded with stimulation, he averts his head to recover himself, before beginning again.

Throughout, the mother serves as a protective "envelope" for her baby, screening out the background noise of the world, letting through only as much stimulation and information as she learns to expect he can handle, enlarging the envelope as her baby signals his readiness for more before he turns away. (Fathers, Dr. Brazelton finds, do something different with their babies. They excite them more, even when they assume a primary care-taking role. Where mothers soothe, fathers tend to whisk their babies off onto gleeful excursions—and babies seem to expect it of them.)

As the mother forms a protective envelope for her baby, so does baby form one for her. In ways that are physiologically measurable, the attachment of mother and infant buffers them both from the effects of stress. The most striking evidence of this comes from studies with monkeys, showing that mother-infant contact lowers the levels of the "stress hormone" cortisol.

This buffering system, says Stanford University psychologist Seymour Levine, "permits a mother to focus on her infant and the baby to focus on his mother. Through the mother-infant relationship, he develops a coping response. He finds he can do something about his environment."

Biologically speaking, today's mothers and babies are two to three million years old. Are there behavioral characteristics that come to us as part of our genetic makeup, as do such characteristics as bone size and blood type? "A mother must take care of her baby, must be close to him," says Dr. Klaus. And mothers have been taking care of their babies for millions of years. "We think that when we put the body of a mother close to her baby, something is turned on that is part of her genetic makeup." The human infant, he concludes, seems to have been built to communicate with its mother. The evidence points to a sophisticated signaling system between them. "If this is so," he says, "then babies make sense. Then the puzzle of their unusual talents begins to unravel."

As Maya enters teens, maternal embrace is looser and results of bonding show in child's self-confidence.

By P.F. Kluge

A modern Icarus reaches to the sun for power to fly

Paul MacCready, the innovative designer of the first successful man-powered aircraft, is taking to the skies with solar energy

Dr. MacCready, intense, scholarly scientist and believer in solar power, has won two aviation prizes.

In recent months an extraordinary aircraft has been flying around Arizona and California. It weighs only 175 pounds. Its pilot, a schoolteacher from Bakersfield, California, named Janice Brown, weighs only 95 pounds. The plane has no fuel, no batteries. Sunlight, activating a small electric motor, turns the propeller.

The plane is called *Solar Challenger* and, although its longest flight to date is 14 miles, this summer it may fly from Paris to London. Its designer is an aeronautical scientist named Paul MacCready, a man who has succeeded where Icarus failed.

Only three years after his *Gossamer Condor* became the first aircraft to fly under human power, MacCready has created a sun-driven plane, sponsored by Du Pont, that should be able to climb 40,000 feet and to fly over 300 miles. No one, at least yet, pretends that the *Challenger* augurs an age of solar-powered aircraft. Commercial prospects for solar-powered flight are rated close to zero by MacCready. What, then, does *Solar Challenger* accomplish? Does it make history? Certainly. Does it rate a spot in a museum, an item in the record books? Granted. Is it a boost for solar energy? Perhaps. But mostly it's fun.

In the summer of 1976, Paul MacCready, his wife Judith, and their three sons—Parker, Tyler and Marshall—set off from Pasadena in a van to visit relatives and pause at such tourist destinations as Carlsbad Caverns, the Alamo, Disney World, Williamsburg—coast to coast and back home again. It sounds like an ordinary vacation trip. It wasn't.

Then in his early 50s, MacCready headed AeroVironment Inc., a company that manufactures air drag reduction devices for trucks, conducts vortex wake studies for aircraft, makes air-pollution monitors and performs air-quality and wind-power studies. Paul MacCready was a builder of model planes, a champion glider pilot, a bird watcher and a scholar—not the type to spend a vacation trip fiddling with radio dials or reading billboards.

"During the trip," he remembers, "I thought a lot about the flight of birds. As we rode along, I studied the circling of hawks. I timed their turns with a wristwatch, estimated bank angle and later calculated turning radius and speed. It's something you can easily do as you drive along."

Just after visiting Kitty Hawk, MacCready had an idea that he now tends to downplay: "I'm sure others have thought of it." If weight is constant, power required for flight is inversely proportional to wingspan for a given airplane shape. Or, as MacCready sometimes puts it, "if you built a plane that was very large and very light, you could get down to where a person could fly under his own muscle power."

"He talks like that all the time," says Judith MacCready. She recalls no particular reaction to her hus-

Gossamer Albatross, earlier MacCready design, was pedaled across the English Channel in 1979.

band's insight. Only that the kids were a little tired of having to pull over to the side of the road so that their father could watch hawks fly.

It happened that a British industrialist, Henry Kremer, had offered $100,000 for the first man-powered plane to fly a mile-long figure-eight course. And MacCready needed money to recoup from a faltering step into sailboat manufacturing.

"I'm glad that the sailboats didn't work out," MacCready now says. "Certainly, without the economic pressure saying 'go do this,' I wouldn't have done it." MacCready insists that the plane he designed—*Gossamer Condor*—was built only to fly that prescribed course, and earn the Kremer Prize.

"After such a project is completed," he says, "you can sit back and ask, 'Was it fun? Was it good for mankind? Is it an art object? How does it fit into the history of aviation?' But the truth is, the plane was built just to win the prize." Others suggest that if money were the only consideration, MacCready would have found another way of getting it.

"He always says he went after the Kremer Prize to pay off bills," a collaborator comments. "I don't believe it. He's like the rest of us. He likes to play with exotic toys."

MacCready wasn't the first to try for the prize. For years, dozens of better-than-competent designers had experimented with man-powered planes, and a few of their machines, elegant and impressive, had been built to enter the Kremer trials. None came close to completing the course. MacCready thought he knew why.

"I've come to appreciate more and more the stifling influence of old thought, old ideas," he says. "Professionally qualified people, big teams with many credentials and plenty of resources, built planes for the Kremer Prize. But because they were experienced, they built them the way planes had been built before. So their aircraft were complicated and heavy and failed. Their prior knowledge stifled innovation."

MacCready's friend, Jim Burke, puts it this way: "Paul's idea was to use the structural principles of a hang glider instead of those of a plane like Lindbergh's *Spirit of St. Louis*."

Crashing is part of the game when MacCready and his gang fly. *Gossamer Condor* (above) crumples . . .

. . . during early Kremer Prize attempt in California. Then (above) *Albatross* lazily folds up a wing.

The story of his success is well-known. *Gossamer Condor*, a giant, exotic "flimpy" plastic wrap with a forest of wires holding it together, crashed many times —so often that designers decided that any part of the plane that had *not* broken was too heavy—but on August 23, 1977, at Shafter (California) Airport, a sinewy bicyclist named Bryan Allen successfully executed the Kremer course, earning himself a spot in record books, MacCready the Kremer Prize, and the *Gossamer Condor* a perch in the Smithsonian's National Air and Space Museum.

With Mylar wings, aluminum tubes, steel wires and plastic bicycle chain, it was a fragile, awkward aircraft. But less than two years later, the same pilot took *Gossamer Albatross*, an improved version, across the English Channel in under three hours, to win another Kremer Prize.

By now, Paul MacCready was called "the father of man-powered flight." He had won the prize and had fun. There were early mornings at isolated airports, tinkering, refining, crashing, rebuilding. Good times. "It's nice being where people are doing what they want to do," Judith reflects. The kids, hers and others, made it a family affair. All three MacCready boys had served as test pilots between building models, flying kites, launching balloons and skateboarding on runways.

But MacCready didn't plan more man-powered flights. He finds beginnings more interesting than middles and endings. "There are other people more dedicated and more competent than I am who like to continue," he insists. "I guess I find it more fun to dash on to new fields."

Before long, he was thinking about solar-powered airplanes. There was no prize this time. The solar flight was to be a matter of principle.

Since talking to reporters is not Paul MacCready's favorite way of spending time—"he'd rather be spreading glue on a plane"—he schedules interviews at odd hours, weekends preferably, and early in the morning.

This morning he answers the door in a bathrobe, covered with sweat. He's been working out on an ergometer, a stationary bicycle, he explains, trying to get in shape so he can pilot and pedal a replica of the *Gossamer Albatross* over the Kremer course. The plane sits in a hangar at Shafter Airport and crop dusters will soon be taking over the hangar. MacCready wants to get into shape to fly before then.

He steps into a book-lined living room, drapes some towels around his shoulders, and prepares to answer questions carefully. You don't ask him about current movies or sports events. But when it comes to solar-powered flight, and solar power in general, Paul MacCready is nearly passionate.

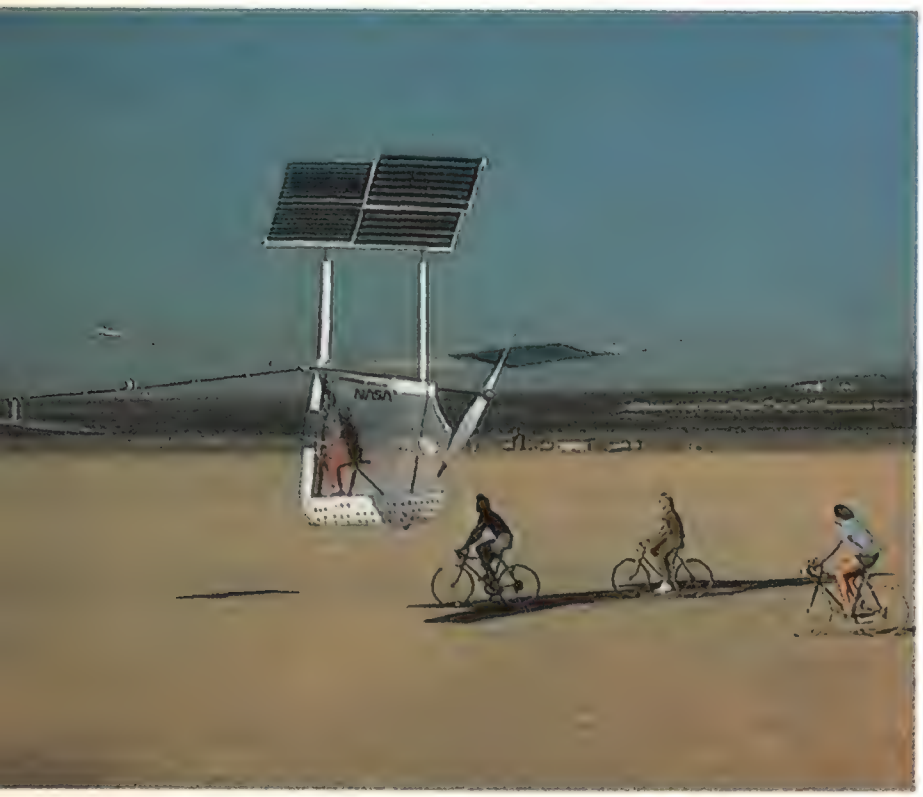
"The underlying reason I'm involved in solar-powered flight is my great *dis*enthusiasm for the way the country is approaching the energy problem: too many short-term influences on political 'leaders,' with the leaders operating in a fishbowl of media attention."

He agrees that government can do some good, "but it has a hard job addressing problems in a long-term way. It can't plan for the future the way a family or a

And at right, *Gossamer Penguin* flumps into a tangle of feather-weight spars and synthetic skin. No one . . .

. . . gets hurt (knock on wood), and the group begins to feel that any unbroken part may be too heavy.

Exhausted pilot, Bryan Allen, called for help on Channel flight, then found smooth air and kept going.



Adapted for sun's power with panels of photovoltaic cells, *Penguin* gets off the ground on test flight.

corporation can. A while ago I realized that half the people in this country would be willing to send my kids to war so they can keep on driving the same cars they've been driving and keep their houses warm instead of solving the problems of energy. Our American motto seems to be 'more.' I asked myself what I could do to help decrease the country's dependence on foreign oil."

MacCready's team developed *Gossamer Penguin* as a backup for the Channel-crossing *Albatross*. Then it replaced the bicycle power with a panel of photovoltaic (solar) cells. An awkward craft, vulnerable to the slightest winds, the *Penguin* nonetheless achieved a two-mile solar flight in 1980 and prepared the ground for the much more sophisticated and powerful *Solar Challenger*. But flying, MacCready insists, is not the ultimate point.

"The project is a showcase for what you can accomplish with limited power and weight, and advanced aerodynamics and construction techniques. Our whole philosophy is that you can accomplish a lot with very little. In the next hundred years people are going to have to get along using less of our resources. Maybe this odd solar-plane project will speed up by one year the use of photovoltaic cells."

Photovoltaic cells. Ray Morgan, manager of AeroVironment's solar aircraft projects and of the Simi Valley facility where *Solar Challenger* was built, holds one in his hands, one of the 16,000 that cover *Solar Challenger*'s wings, capture the rays of the sun and convert them to electric power for the motor.

"Basically, the sun excites the crystalline structure of the cell," Morgan explains as he holds the brittle silicon wafer in his hand. "A photon—that's the unit of sunlight—knocks off an electron which tries to go back where it came from, from the negative to positive side. Some can, but only so many of them. It's like a clogged freeway. Other electrons have to take a bypass. We route them through our circuitry and they power the plane's engine."

Challenger's cells are government surplus, but their market value is from $150,000 to $200,000. The price is expected to drop drastically as manufacturing techniques improve.

Morgan supervises a crew of enthusiasts, mostly avid model plane builders, caught up in MacCready's pioneering. Their workshop is littered with Du Pont's ultralight materials—Mylar for the plane's surface, Kevlar for lines, Nomex for spars. In one corner, a wing spar is being woven around an aluminum tube. Later the aluminum will be etched away with acid. At

P. F. Kluge has written previous articles for SMITHSONIAN *on Mt. St. Helens eruption* (July 1980) *and the U.S. Geological Survey* (March 1979).

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Solar-powered plane

the center of the room, styrofoam wing ribs are being fitted and glued. Foam propeller blade cores sit on a table. Everything is feather light and so too, at the doorway, is *Solar Challenger*'s pilot, Janice Brown.

"I weigh 95 pounds now," she says, not declining a piece of lunch pizza. "In winter it's critical to keep the weight down because the aircraft is marginally underpowered. I can fly in only one direction. Since the sun's angle is low, I have to keep my back to the sun so it can hit the solar cells. But in summer we'll have tons of sun and can fly anywhere."

Having delivered a lecture the night before, Paul MacCready leaves Pasadena a little before 4 A.M. and drives toward Bakersfield, to the building they sometimes call the Shafter Hilton. It's a World War II hangar where owls nest in rafters and collaborators sleep on the floor in sleeping bags, and where his *Gossamer Albatross* barely fits between rickety wooden walls. A little after dawn, MacCready pulls *Albatross* onto the runway, slides inside the Mylar envelope, mounts the bicycle and starts to pedal. The pusher propeller starts to turn.

Shafter airfield was a massive installation during World War II, when it was known to thousands of Army Air Forces men as Minter Field. Glenn Miller played there. And now MacCready plays, pedaling harder. The wheels of *Albatross,* looking like those on a shopping cart, roll noisily across the concrete until, amazingly, the plane lifts five feet into the air and heads 100 yards down the runway. There will be a dozen such flights this morning, until winds get squirrelly, around ten o'clock. Flights for relatives, friends, fellow workers. MacCready will sprint down the runway, pulling a towrope, launching the plane. He will follow flights up and down the runway on a borrowed bicycle. He will say little, and then he is usually clipped and preoccupied.

He reminds some people of Mr. Peepers—the complete, bespectacled scholar. But the man is definitely having fun.

Even with low-angle winter sunlight, *Solar Challenger* was able to fly 14 miles in test flight.

Black solar cells in wings and tail convert sun's power to electricity that drives propeller.

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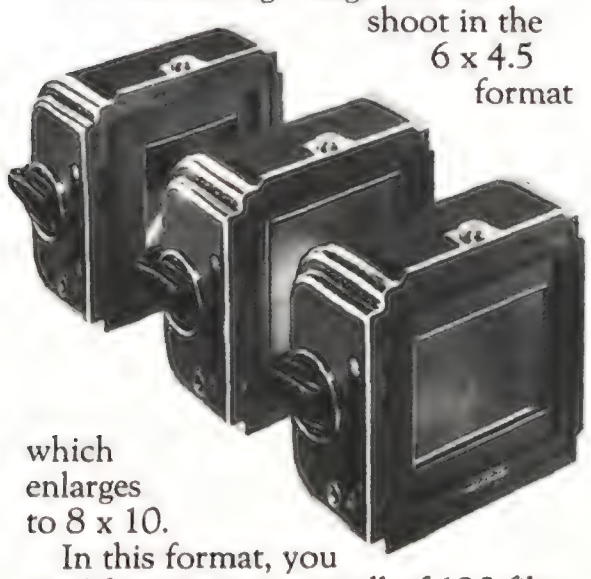

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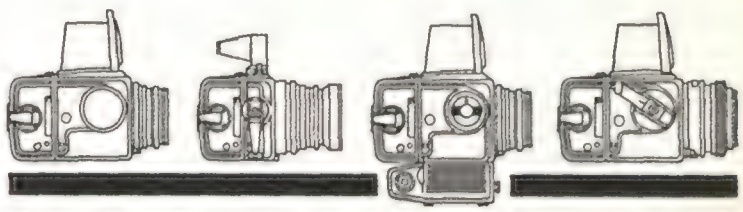

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Audience and orchestra stand as maestro conducts
the National Symphony in *The Star Spangled Banner*

By Joseph McClellan

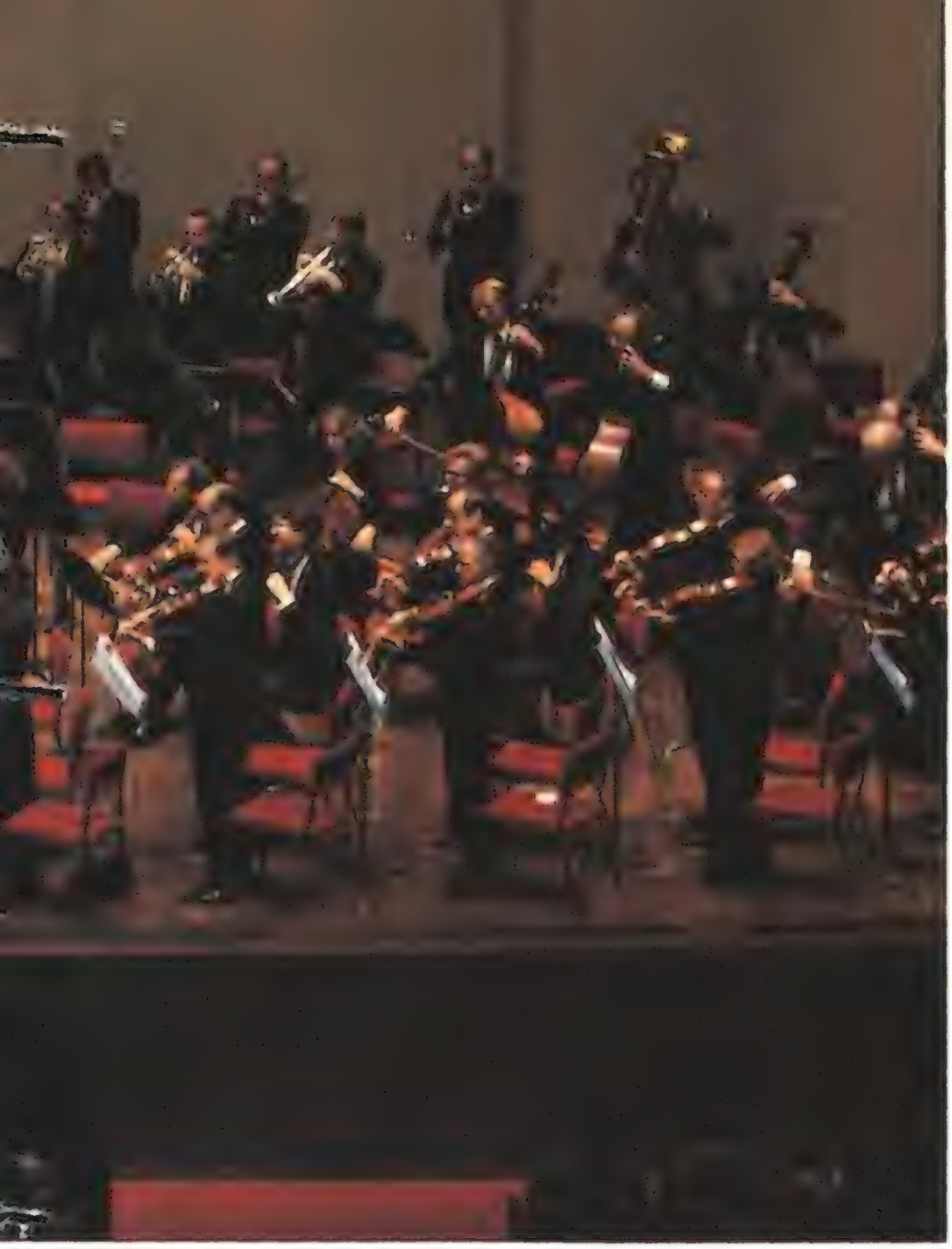
Pushed by 'Slava,' National Symphony strives to be great

Under the baton of Mstislav Rostropovich, a brilliant cellist banished by the Soviets, Washington, D.C.'s orchestra is aiming high

What's in a name? For Mstislav Rostropovich, it's both a reputation and a mandate. Everyone who knows the brilliant, 53-year-old musician bypasses his unpronounceable first name and calls him "Slava," which happens to be the Russian word for "glory."

The nickname is a sober, literal description of Rostropovich's career. He has been acclaimed as a great performing artist for more than a quarter of a century, and since the death of Pablo Casals he has been generally considered the most exciting cellist alive. The list of composers who have written for him is formidable: Bernstein, Lutoslawski, Britten, Kabalevsky, Dutilleux, Khachaturian, Piston, Prokofiev, Sauguet and Shostakovich are included, a compendium of illustrious names in modern music.

We are speaking, of course, of Rostropovich the cellist, a familiar name wherever classical music is played and loved, a man to whom music-making seems to come as easily and spontaneously as flowers in a Washington spring or ice in a Moscow winter. Rostropovich the cellist has no problems at all, except the problem that he can't go home again. At first he



at opening of the subscription series last September, beginning Slava's fourth season as music director.

While the conductor rehearses his orchestra Pooks, his miniature dachshund, snoozes.

was permitted to leave his native country, but later was stripped of his citizenship for "acts harmful to the prestige of the Soviet Union" (he had befriended and taken into his home novelist Aleksandr Solzhenitsyn when the government made the writer a nonperson). Rostropovich stands with the exiled Solzhenitsyn, such defectors as dancer Mikhail Baryshnikov, chess grand master Viktor Korchnoi, pianist Vladimir Ashkenazy and others as a former citizen of the workers' paradise. Distinguished exiles from the USSR now make up the most impressive list of exiles since the 1930s, when Hitler "cleansed" Europe of Albert Einstein, Thomas Mann, Arnold Schoenberg, Kurt Weill and a whole generation of other geniuses.

Rostropovich was in his late 40s when he was hounded into exile. In 1961, while he was still in the Soviet Union, he had begun to extend his musicianship into a parallel career as a conductor, without abandoning his old career as a cellist. Once he was cut off from his motherland, that career extension became decisive; he moved to the ideological polar opposite of Moscow to become the music director of the National Symphony Orchestra in Washington, D.C.

It was a predestined encounter. A man cut off from his roots had connected with an orchestra in crisis serving a city without roots. The National Symphony has spent half a century looking for glory, and now it has Slava.

There are more than 1,500 symphony orchestras in the United States, and it is natural to expect that the best of them would be the one in the nation's capital. It has not worked out that way, so far, although there are signs that the situation is beginning to change. The reason is simple: great orchestras, like wheat or orchids, tend to grow in a particular kind of social soil, a particular kind of cultural climate, and Washington, for most of its history, has not provided that kind of environment.

The National Symphony began life in 1930, at the beginning of the Depression. That makes it 50 years

Joseph McLellan is a reporter, critic and book reviewer for the Style section of the Washington Post. *He specializes in the performing arts.*

Photographs by Richard Howard

A musician's view of Mstislav Rostropovich . . .

younger than the St. Louis Symphony, 49 years younger than the Boston Symphony, and 88 years younger than the New York Philharmonic, which dates back to 1842. All the major orchestras in the United States have a substantial head start, chronologically, on that of the nation's capital, and the advantage of timing has been reflected in their prestige.

The reason for the NSO's late start and for its continued sense of lagging just behind the front-runners in the orchestral prestige sweepstakes is primarily financial. Great orchestras tend to grow in cities with major industries and old family fortunes. With Washington lacking both, the Symphony's endowment is a fraction of those of other large orchestras. And it has no state arts council to underwrite deficits.

Washington is a one-industry town, and that industry, the federal government, has shown no interest until very recently in supporting a symphony orchestra. When it did begin to give money to the performing arts, through the National Endowment for the Arts, it had to spread its largesse across the whole country. Last May, for example, the NEA announced grants of $9.2 million to 148 American orchestras for fiscal 1981 —a massive escalation from the beginning of its music program in 1973, when a total of $63,000 served both opera and orchestral music. Out of the $9.2 million, the orchestra in the NEA's hometown got $175,000.

The NEA allocates its grant money under a complex formula, ranking each orchestra on such points as audience served, administrative acumen, minority participation, use of American music, soloists and conductors, outreach efforts. "But first and foremost is orchestral quality," says Adrian Gnam, NEA's Assistant Music Director. An orchestra scoring 100 percent receives the largest grant; one with a 90 percent score gets 90 percent of that amount, and so on.

The maximum grant ever given an orchestra by NEA is $300,000. This went in the current fiscal year to six orchestras, five of which are usually called the "Big Five" in musical circles: Boston, Chicago, Cleveland, New York and Philadelphia. The sixth was Los Angeles, which is pushing hard (as is the NSO) for admission to the charmed circle at the top. In order to receive any federal money at all, an orchestra must show that it has raised, through individual, corporate and foundation support within the community, at least as much as the NEA grant.

. . . leading his charges through a rehearsal . . .

When they have lived together for a long time, an orchestra and the ruling class of its parent city seem to take on certain common characteristics. The Boston Symphony is aristocratic but moderately adventurous; the New York Philharmonic is brash and brilliant, with sometimes a touch of crass insensitivity underlying its obvious expertise; the Philadelphia Orchestra is refined almost to excess and notorious for conservatism in a field dominated by conservatives.

Washington's orchestra fits neatly into this pattern. At 50, in the throes of its mid-life crisis, it is often insecure, plagued with problems of identity and self-esteem, looking for firm leadership to assert its proper position in the world. It has played, traditionally, for audiences of civil servants, people in transit, people whose roots were somewhere else. That audience is changing slowly, as more and more Washingtonians sink their roots into the city, but there is not much old money there. Citizens with inherited wealth tend to have the roots of their fortune elsewhere.

Next to government, publishing is probably the main occupation of the nation's capital, and the publishing industry is being enlisted in a major campaign to support the National Symphony as a national institution. Under the chairmanship of Austin Kiplinger (publisher of *Changing Times* magazine), the NSO board last year began wooing the support of corporations throughout the country. An example of the campaign's tactics: a full-page ad published last summer in *Time, Fortune, Sports Illustrated* and *Changing Times* with a headline that trumpeted, "A Classical Way to Conduct Business in Washington."

"The National Symphony Orchestra invites your company to play an instrumental role in furthering the great musical traditions of our nation's capital," the ad said. "Become a National Corporate Sponsor."

By no coincidence at all, the then-chairman of the National Corporate Sponsors Campaign was James R. Shepley, until his retirement in January president of Time, Inc., which has been setting down roots in the Washington area with the purchase of a daily newspaper, the *Washington Star,* and the transfer of headquarters for Time-Life Books to Alexandria, Virginia, just across the Potomac from the District of Columbia.

In the 1977-78 season, when Rostropovich became music director and Kiplinger was elected to head the board of directors, the orchestra's budget was $5.4 million. For the 50th anniversary season it has risen to $7.9 million. This is still substantially behind such orchestras as those of Boston, Chicago and New York.

The intricacies of the Symphony's finances were dwarfed last fall by the complexities of getting Congressional approval for a million-dollar matching grant authorization. It was passed, finally, as an amendment to the Department of Interior appropriation bill in the waning days of the 96th Congress and signed by President Carter on December 12. It will match, dollar for dollar, money the NSO raises in fiscal 1981, in increments of $100,000, and will be administered by the National Park Service. This year's fund drive aims to raise $3.5 million, beyond matching the federal grant. By the first of January pledges amounted to more than half a million. Box office receipts may enable NSO to meet its budget.

Money matters, first of all, because good musicians get good salaries. The median salary at the NSO is $29,000 plus fringe benefits—$4,500 less than a full professor can expect at a good university. The minimum is $26,500, and some of the principal players go up into the $30 and $40 thousands.

But money is only part of the story; orchestral musicians must be unanimous on stage, but before and after a performance they are an individualistic lot; the good ones, who are able to move out, will not stay long with a conductor they do not respect. "Since Slava became the music director," said Kiplinger, "we have not lost any players we did not want to lose."

Besides keeping the best players he inherited from the previous conductor, Antal Dorati, Rostropovich has eliminated a few who did not meet his standards, and he has enlarged the orchestra, substantially improving its sound. The job may not be complete ("We still have a lot of passengers in this orchestra, particularly in the violins," says one player—not a violinist), but the difference is clearly audible to those who have been hearing the orchestra through the years.

The orchestra's brighter, richer sound also reflects

. . . and for the moment, looking satisfied . . .

. . . but as this gesture shows, most exacting.

Andrejs Lindbergs marks scores at Kennedy Center. Injury ended violin career; he turned librarian.

Orchestra's newest member, French horn player Laurel Bennert, won out over 145 other applicants.

Alone on stage at the Concert Hall in Kennedy Center, principal cellist John Martin, shirt-sleeved,

an improvement in morale among the players. The impact of Rostropovich has not been unmixed; a bitter struggle centered around the forced retirement of principal flutist Wallace Mann, for example, but Slava has won the allegiance of his most critical audience, the people who play under his baton. He has done it through a combination of prestige, technical expertise and pure personality.

The personality is warm, ebullient and outgoing; it is expressed in the generous way he shares applause after a performance, in the massive (often soggy, for conducting is hard physical work) bear hugs he gives backstage to almost anyone within reach, in the colorful directions that pepper his rehearsals ("Sound like a million devils . . . Four old women in the audience should have heart attacks"), and above all in his clear-cut identification with the interests of his players. When the orchestra went on strike at the beginning of his second season, he marched on the players' picket line—and was nearly arrested for marching in an area not allowed in the picketing permit.

There are still disagreements among the players. One will be saying "It was loud and vulgar," while

in rapt concentration, practices on Stradivarius before a performance with the National Symphony.

they are packing away their instruments after a concert, while another, a few feet away, will be gloating: "We really did it tonight."

And with the disagreement, there is uncertainty. Anyone who was out front and comes backstage is certain to be asked "How did it sound?" by more than one player—an orchestral musician is like a foot soldier in combat, unable to observe more than a fraction of the process in which he is participating. But "How did it sound?" means more than that. It is a request for feedback; the orchestra has a fair idea of how well it has done on a given occasion, but it is less certain how well its efforts have been received.

How it sounds is generally good but variable. There are times, under the baton of Rostropovich, when the National Symphony sounds like one of the world's greatest orchestras. This is true, particularly, when the music is modern and/or Russian—Shostakovich, for example, who was Slava's teacher—and it is increasingly true in the traditional German-Austrian repertory. His potential is unlimited.

The orchestra's performance is actually more consistent under other conductors—under Rafael Früh-

First Violinist Andreas Makris, composer in residence, goes over composition of his own before première.

Orchestra's senior member is Milton Schwartz, now 72, holding 50-year-old publicity still of himself.

beck de Burgos, for example, who is conducting the orchestra for six weeks this season as principal guest conductor. Frühbeck is a seasoned professional who has always shown a special rapport with the orchestra during his guest-conducting appearances. Rostropovich seems to recognize and accept this distinction. "It will give our orchestra a wonderful stability," he said, when he announced Frühbeck's three-year appointment to the principal guest position.

The key word in that statement is "stability," and it is chosen with precision. Kiplinger half-echoed it when he was asked how the board of directors will know when the orchestra has reached its goals: "Consistency may be the measure—and on that score, you will have to give us a little more time."

Today the Symphony is conducting a nationwide search for a new president (former president Martin Feinstein resigned in December to devote himself exclusively to his other job as general manager of the Washington Opera), and is operating under a new chairman, attorney Leonard L. Silverstein. As Silverstein sees it, the orchestra has these major goals: "Musically, under Rostropovich, we are rapidly reaching the stature the nation's capital merits—that of a world-class symphony. But we must establish a presence outside of Washington, both nationally and internationally, through an expanded program of tours and recordings. Welcoming to the board people who live outside Washington would reinforce our linkage to the rest of the country. We need a stable funding base. In this, corporations should help. And our government must play the 'local' role with the proper appropriations."

During the past year, the orchestra has made two foreign tours—to Japan and Latin America—and more of these should be expected. Also to be expected are festivals similar to last fall's Isaac Stern Festival, staged by Kennedy Center. The center hired the NSO to play for the bravura series, which spanned two weeks and featured the great violinist in performances of eight concertos and Chausson's *Poème*.

Finally, the orchestra should begin to enjoy the services of the world's greatest guest conductors almost as a matter of routine. This will take some time to work out, because great conductors tend to be booked several years ahead, but the dynamics for wheeling and dealing in this area are available. Rostropovich, who is a friend of most of the world's leading conductors, can swap appearances as a cello soloist for a guest conductor's agreement to come and conduct the Washington orchestra.

Wherever the National Symphony goes, a traveling poker game goes along. The players are mostly veteran members of the orchestra, and the game has been going on, with frequent interruptions and gradual changes of personnel, for almost as long as the orchestra has existed. By now, the techniques are as smooth as the routines for performing a Beethoven concerto. When the orchestra is traveling, a few card players get on the bus early, occupy strategic seats in the back, set up a suitcase in the aisle to be used as a card table, and before the bus begins to move the game is in progress.

The National Symphony has less experience in the more complicated poker game of international musical prestige, but it has clearly dealt itself in. This game moves slowly; it has taken half a century for the orchestra to put its chips on the table, and years will pass before its wins and losses can be tabulated. But the game is in progress, and at the orchestra's concerts these days you can hear the excitement of players who know they are going after high stakes.

Dressed as Haydn at 50th anniversary gala, Slava puts Zbigniew Brzezinski through paces on toy trumpet.

Heading to nearby Watergate home after rehearsal, conductor walks past Kennedy Center Hall of States.

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Jet awaits passengers at one of Delta's 51 gates. Delta was first into Atlanta in 1930 and, again, in 1980.

By Maxine A. Rock

A gigantic airport harmonizes art with technology

In Atlanta's enormous new terminal, paintings coexist with translating telephones, moving sidewalks and computers that handle baggage

One day last fall George Berry, Atlanta's Commissioner of Aviation, squinted up at the dawn sky in time to see a silver jet disappear into pink clouds. He grinned at Deputy Commissioner Calvin Carter, who sighed with relief and quickly murmured into his walkie-talkie. It was the first day of operation for Hartsfield Atlanta International.

"Tell the staff it works!" Berry shouted gleefully. "It really *works*!"

Berry's joy—and perhaps astonishment—are easy to understand, for the management team that Berry heads had spent years of research and $500 million in coaxing the world's largest and most innovative terminal complex out of raw Georgia cornfields and rural subdivisions.

Today, the airport rises from the ground like a part of the Chinese wall: thick, straight and solid. It caps

The flashy neon lights of *Four Walls for Atlanta,* by Stephen Antonakos, attract all departing travelers.

Photographs by Jim McHugh

the horizon with a row of tall, gleaming windows set in concrete, like the unblinking eyes of a giant computer. "When it was finished," Berry says, "I felt like the future walked up to me, grabbed me by the shoulders and shouted hello."

William B. Hartsfield Atlanta International Airport covers 2.2 million square feet. That's enough space for seven 31-story office buildings. It houses a subway, 13 newsstands, 12 gift shops, 17 snack bars, 18 cocktail lounges, six car rental agencies, specialty shops and a fine restaurant. It has 138 airplane gates and five miles of runways, 1,200 public telephones, 100,000 light bulbs and enough computers to send a space-age engineer into blissful shock.

Passengers poke shiny buttons on the "translation telephones," which answer questions and give travel advice in Dutch, German, French, English, Spanish and Portuguese. They stride through giant, brick-tiled concourses and onto moving sidewalks. They ride 40-foot escalators and stare at the tall, ceiling-high windows pouring sunlight on the fabric and concrete walls, and they hop on and off minitrains gliding soundlessly every 120 seconds through underground tunnels, bringing 11,200 people per hour to their airplane gates. But they get jammed so fast with travelers that minor malfunctions keep popping up. Now a recorded announcement urges passengers to walk or take another people-mover—the moving sidewalk—if they are going only one stop. Still, airport officials say the trains are so popular they are crowded with sightseers who come to the new airport just to joyride.

George Berry calls the trains "horizontal elevators," and says they are the key to the airport's success. "And they were almost an accident," he adds.

"In 1975, Atlanta Mayor Maynard Jackson insisted that if we were going to have a new airport—an airport that would make the city a major transportation hub

Lynda Benglis' brilliantly colored satin appliqué, *Patang*, offers diversion at Eastern check-in counter.

Designed to accommodate 55 million annually and move them quickly, airport is eerily quiet when all

of the world—we'd better merge high technology with deep humanity. So he said that no less than 25 cents out of every dollar spent on airport construction had to go to minority-owned firms. "That caused a five-month delay, but it was a blessing in disguise. Why? Because while the politicians hammered out a way to merge engineering progress with social progress, the designers used the time to rethink their plans. It was then they broke through with the train idea. Instead of trying to crowd planes around one long terminal building, we conquered the space by using a mechanical contraption to move people. Ours is that little jet-like train, and with it we have overcome horizontal space. It changed the history of the airport."

The airport's history started on a dusty oval racetrack in 1911, when Atlantans turned out to cheer a race between an automobile, a biplane and a motorcycle. The automobile won, and the biplane finished only a few minutes ahead of the chugging motorcycle. People wandered home, muttering that airplanes would never be much good.

But one young man in the crowd, William B. Hartsfield, said he knew better. He pushed for an airport at the dusty racetrack, and became chairman of Atlanta's first aviation committee. In 1926, tiny beacon flashes along the spine of the Appalachian Mountains lighted the way for an air link with New York City, and the first mail flight hopped off in 1928. Two years later Delta Air Service—now Delta Air Lines—brought the first scheduled passengers into Atlanta. Hartsfield became a legendary Atlanta mayor, and "his" airport became the biggest terminal complex in the world.

At the beginning, says Bill Berry, an official of Delta Air Lines, "Things got a little wild. The computerized baggage system worked *too* well: bags were zipping from the passengers to the baggage handler much faster than our people could get there to load them. Zip! Zip! The luggage was just leaping away from us. We had to add more staff to take control."

The bigness of the airport is its most overwhelming feature. Twenty-five thousand people work within its confines, and it was designed to serve at least 55 million passengers a year. "People pour in here, then spread out and seem to disappear," says passenger coordinator Bernie Leedy. From his swivel chair in a new, glassed-in ramp tower, Leedy directs people and planes to their proper gates. "The numbers, the space, the complexity, the bigness is incredible," he says. "There is so much bigness here that the airport seems eerily quiet, and almost deserted, except at peak afternoon flight times. People are swallowed up."

Maxine Rock has contributed several articles to SMITHSONIAN *on research at the Yerkes Primate Center in Atlanta, the latest appearing in April 1979.*

the machinery is running smoothly. A crowd scene (below) happens at peak arrival and departure times.

Underground trains, holding up to 100 people in each car, speed passengers along at two-minute intervals.

"The amount of space does take some getting used to, but the place is well-designed," says Herb Lancaster, an architect from Montgomery, Alabama. "The art gives this place interest, and wonderful human scale. All the main wall and floor colors are neutral grays and tans, and at first you think you're going to get lost in it. Then the art pops out at you. It's everywhere: on the walls, the ceilings, over the escalators, even at the entrance to the rest rooms. What a wonderful way to merge function and esthetics."

This merger was carefully planned by Shirley Franklin, Atlanta's Commissioner of Cultural Affairs, who wanted to use the airport as a giant gallery because "Art is a part of public life." So city government, the airlines, the Federal Aviation Administration and the National Endowment for the Arts all pitched in to provide funds to commission and install stunning works by local and national painters, sculptors and photographers. Now Sam Gilliam's controversial "sprayed" canvases drape over the windows (below); birds in the painting by Benny Andrews soar near the ceiling; neon tubes by Stephen Antonakos (p. 91) light up the escalators; vivid satin appliqués by Lynda Benglis (p. 92) make a brilliant display in the north terminal. There are 13 artists whose work will be permanently displayed throughout the airport, and on Saturday nights young couples drift hand-in-hand, gazing at the art. "They come to the airport just to look, just to *be* here with the space and the art," says a security guard. "It's a tourist attraction."

The art does not please everybody; a freight loader grumbles that if the art had come in as air cargo, he would have sent it back labeled "damaged freight." Architecture critic Paul Goldberger of the *New York Times* looked at the whole airport as art and pronounced it ugly because of its bare, colorless walls and tile floors. It is hard to get over "the sense that one is caught in a huge machine, something like a great Xerox machine," Goldberger wrote of the airport. He says the giant building lacks warmth and style, too, and that its concourses are dull because they are "laid out as clearly as the lines of a tick-tack-toe board."

But most travelers apparently are too busy looking to do much complaining.

A grinning Frenchman points to Curtis Patterson's huge bronze sculpture, lifts his arms to encompass the entire concourse, and shouts, "*Magnifique*!"

An Indian couple steps into the airport's minitrain; they look at one another, giggle in delight, and sum it all up in one word: "Su-per!"

Washington, D.C., artist Sam Gilliam's especially created *Delta Wave*—painted canvas with enameled metal bars—looms above a temporarily empty Delta Air Lines baggage area manned only by skycaps.

Professional achievements require more than the technical knowledge that suggests their possibility. Achievements also demand that professional people act on their special knowledge with confidence and creativity. To do this effectively, they need to be free of the fears their liability as professionals can create. Among these is the fear that even a responsible action might backfire and threaten their professional reputation.

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The essence and joy of a flower-filled day are caught within the eight-by-ten-inch borders of *Oil and Water II*. It is made of pansies, bachelor's buttons, verbena, nemesia, scilla, phlox and nasturtiums.

By Celia Betsky

His garden is his palette, petals are his paints

Creating a natural art form called 'fleurage,' Harry White makes vivid pictures with pansies, daffodils—and an occasional leaf of spinach

Harry White and his self-portrait. Photo was taken at National Arboretum where he showed in 1980.

Imagine if Helen Frankenthaler's soak-stain paintings had been crossed with Persian mosaics. The current school of pattern artists, such as Joyce Kozloff or Kim MacConnel, also comes to the delighted mind's eye, but so do the loveliest of great-grandma's quilts. This is the art of Harry White. The method White uses to create his stunning works of art answers to none of the above descriptions, though. He says it with flowers. With flowers pressed and dried into brilliant bits of color and glued into patterns that respect their organic shapes as well as explore new designs. This resembles, of course, another artistic mode popular with the avant-garde today—collage—and so White uses the name "fleurage" for his art form.

White's studio is located—unromantically, some might say—in the suburbs. But Jamaica Plain, just outside Boston, still retains traces of romantic nostalgia in the form of Victorian gingerbread mansions, diehard storefronts from the 1930s and a dignified Romanesque revival structure that an Irish gardener informs you in his brogue is the Blessed Sacrament School. He is mowing the lawn a block down the street from where Harry White lives. It is a working-class neighborhood of modest homes and quiet family lives. But the 32-year-old White is the kind of artist who makes you see the world differently. The name of his street is Sunnyside Street, and even the green trim on the unprepossessing gray-shingled house where he occupies the topmost apartment seems to be playing its part in the greening of America that White aspires to.

White himself is outgoing, witty, alternately spirited and reflective, and quite dapper, even when he is gardening. His small frame brims with endless energy and he constantly exudes affection and enthusiasm for his two closest groups of friends—flowers and fellow artists. He talks about them and speaks to them in the same way, for flowers are his "partners."

His art seems to reflect the fact that he most admires artists who have changed the way we perceive relationships between reality, nature and art, or who treat these subjects in the most intense, original manner; "Picasso for his productivity and his attitude, van Gogh for his color." He also identifies with artists who "buck the system," or those who follow their own instincts, like Katharine Hepburn. He places himself emphatically within a "high art" tradition, for that matter. He believes his art is "fine art" and should not be placed in a craft context. "I think, feel and react like a painter, even if I work like a craftsman," he explains. "When people first see my work, they think

Preparing his "palette," White presses petals, carefully layered with tissues, in telephone book.

White's works are frequently inspired by some special occasion. *Wedding Present* was done in 1978 for

it's done with paint. I feel I have pioneered a new medium." Pursuing the possibilities of a new medium doesn't mean neglecting the old, either. One of White's proudest possessions is a six-foot-long paintbrush made for him by another artist; he considers it an incentive to try his hand at painting.

Metaphorically speaking, however, for White the brush that has affected him most of all belonged to Claude Monet. "Travel terrifies me, but I would go to France so that I could visit Monet's house and garden at Giverny (SMITHSONIAN, February 1980). I'd like to collect flowers there to use for a truly Impressionist piece." White has shaped Monet's statement, that he owed his becoming a painter to flowers, into his own sense that "part of my art is the fact that I have a garden. The more time I spend with flowers, the better my ideas are."

That garden is a testimony to his untiring need to make everything he encounters "delightful." Ever since he moved to Jamaica Plain five years ago, he has worked to transform what was an arid yard filled with old tires and mattresses into a small but exquisite tapestry of flowerbeds and blooming shrubs. The garden also figures prominently in his special vocabulary, which uses the language of art interchangeably with terms from the natural world, so that his garden has become his "palette" and he "harvests" his colors both literally and figuratively. The names of countless kinds of flowers trip off his tongue like magic invocations, a Latin term here, a quaint, folksy title there. As he points out each flower or plant, he may conduct a brief discussion with it about its health or its potential role for his art.

Other things besides flowers and ideas grow in his garden, though. A sink "makes my houseplants feel at home," the graceful shape of an old sled supports pots of geraniums, the base of a marble birdbath acts as a curvaceous piece of sculpture. The garden is itself a "work of art" and it is dedicated to artists; the brick walkway White has laid down was made from bricks he carted away from "the factory," an artists' building that burned down several years ago. The word "factory" is spelled out in bricks down the middle.

friends. Pine needles are from wedding arch, lettuce leaves from feast salad and ivy from wedding site.

Laundromat II was made of lettuce, spinach, pansies, black tulips, delphinium, roses, morning glories.

White was besieged by curious neighborhood children when he first started his garden, but people are not his only visitors. "Gardening is hard," and threats range from the capricious New England weather to curious dogs and cats. But visitations also have their bright side. "You don't see a lot of butterflies in this area," White comments. "But when they see the colors in my garden, they flutter right down and I get tons of them." Moreover, just this year his garden has been extended in time and space: in his basement he now has Gro-Lites with which to nourish seedlings through the winter.

While these tiny plants unfold in the basement, White works with their full-grown relatives upstairs. The room where he works, his place of creation and creativity, is at one end of the long, narrow hall that cuts through his compact apartment. The hall is so dark that he has strung white Christmas lights around the many pictures that line the walls. These include some "old" Harry Whites: dried-flower compositions he did before he produced *Oil and Water,* his first fleurage, in 1975, in the flurry of what he remembers as an almost visionary experience. Art remained a fairly unremunerative vocation until recently and White, who studied interior design at the University of Connecticut, struggled to support himself at a number of jobs, from doing window displays to framing to scooping ice cream. Now he feels his art must be a full-time proposition.

The floor of his work room is painted white, with a purple, block-printed border, and an even whiter curtain silk-screened with an iris pattern shifting in the breeze. But it is also the white of a laboratory, of an environment where every movement is an experiment, every decision an artistic adventure. Inside a series of shelves are stacked sheets of white paper towels. In between the sheets rest pressed and dried flowers, leaves and individual flower petals waiting to become a part of the subtle color schemes, tonal harmonies and intricate shapes of White's fleurages. They

Celia Betsky is an associate editor of Portfolio *magazine and a critic for National Public Radio.*

are arranged alphabetically by flower, although someday he plans to cross-index them by color, too. Each petal is "like a piece of colored paper to me," and he uses its hue like watercolor.

White spends from two to eight hours here every day, kept company only by the music of Keith Jarrett's solo jazz concerts. Through trial and error and the advice of book and print conservators, he has learned to work on nonacidic museum board and to use acid-free polyvinyl glue. He wields an X-Acto knife and glue brush with finesse and precision.

It takes up to three weeks of being pressed between Kleenex inside a telephone book to dry the petals. White probably has the largest collection of Boston Yellow Pages outside the Public Library. From past experience he is also able to anticipate if flowers will change color; blue morning glories turn pink, for example. When he first started he used paper towels in the drying process and learned from this that petals can be textured. A work called *Roses and Track Shoes* consists of rose petals imprinted with sneaker treads.

Sometimes variations of a color help tell a story, as in *Journey of the Sun*, an image of the sun's course over a 24-hour period. The sun is a recurrent presence in White's work, and not only for artistic reasons. "Using the sun is about as political as I'm ever going to get," he says. "I'm just going to keep showing it to people and telling them that this is what matters; this is what we should turn to." He is even more devoted to the sun's counterpart, the moon. Made from delphiniums, now from light-green dusty millers or lilac flowers, it is a favorite subject.

In this favoritism White is merely giving credit where he thinks it is always due: to nature itself. He has integrated the ways and means of the natural world as much as possible into his work, especially the idea of change. All his fleurages fade slightly within the first few weeks of their existence, but White welcomes this process, for the new tones "have a beauty of their own. New relationships happen." Just as time is a regenerative force for him, nature represents procreation as well as creation in his art. Thus the various flowers in his piece *Water Lilies and Polliwogs—To Alba* are doing a little mating dance, while *Wedding Present* (pp. 98-9) makes visual and symbolic references to the coming together of male and female.

As is the case with most of his works, *Wedding Present* was done for specific people and a special occasion. Flowers from the wedding became White's materials. White's fleurages are highly personal; they are tied intimately to the lives and individualities of the people he makes them for. Sometimes, of course, the inspiration comes from himself, and the compositions capture meaningful instants when White looked out of his *Kitchen Window* or drove down an expressway in Washington, D.C. (below).

His abstractions represent his most vivid moments of spiritual insight, of psychological keenness. "Lots of therapists buy my work," he jokes suggestively. But he is only half joking. He would like to help people "communicate with themselves." Certainly just looking at his intriguing works of art, which pay homage to what White calls the "mystery" of the universe, is a happy experience. It is a reminder of brief moments of perfection, when the solutions seem near at hand.

Clematis, cineraria, coleus, cosmos, crocuses and delphinium form an *Expressway, Washington, D.C.*

Untitled fleurage is made of daffodils, narcissus, phlox, hydrangea, geraniums, gerbera and crocuses.

By Richard Wolkomir

Waging war against the cold is the job of a unique Army lab

From the Greenland ice cap to the Antarctic, CRREL's corps of scientists and engineers probe ice floes, permafrost and even potholes

At a scientific hot spot in Hanover, New Hampshire, it is forever winter. Outside, the August sun may blaze. Inside, it is 30 degrees below zero F. Scientists bundled in parkas scrutinize crystals of Antarctic sea ice or slivers maybe 100,000 years old from the Greenland ice cap.

Here at the Army's Cold Regions Research and Engineering Laboratory (CRREL), miniature icebreakers sail an artificial lake. Through one vast room flows a scale-model river, precise to the least swirl and eddy. Sophisticated missiles "learn" to "see" in snowstorms. Arctic ice ridges, frozen canal locks, helicopter icing, Antarctic microorganisms, icebergs, floes, highway potholes—if it's frozen, frosted or just plain cold, CRREL's researchers are interested.

Why this preoccupation with winter?

First, oil—iffy world supplies have sent us to Alaska and out onto the Arctic Ocean ice, probing for petroleum. Suddenly we must know everything we can about operating equipment in the northern Deepfreeze, about permafrost, about the dynamics of snow and ice and frigid seas.

Second, strategics—international military attention is again shifting to the north, to the NATO-Warsaw Pact countries, Afghanistan, the Sino-Soviet border. "The Russians have a reputation for being extremely proficient in winter operations," says CRREL's commander, Lieutenant Colonel Alfred B. Devereaux jr., of the U.S. Army Corps of Engineers.

Bundled against lab's 14-degree cold, Stephen Ackley studies cross-polarized ice crystals from Antarctica.

Third, climate—most of the world's people live part of the time in a cold climate, according to Devereaux. And much of the lab's research involves everyday winter problems: snow loads on roofs, frost-damaged roads, icing on helicopter rotors, ice-clogged waterways and canal locks.

"A good Ice Age is just what this country needs," quips one CRREL physicist. Like a few of the lab's researchers, he skips lunch in winter for a "cross-country ski break." Some of CRREL's 350 workers go through the frigid New England winter coatless. And, when they aren't in their subzero labs, they often are winging toward some of the world's nastiest regions.

In the summer of 1977, for instance, CRREL civil engineer Wayne Tobiasson stood on the Greenland ice cap and pondered a sick building. At 6 feet, 10 inches, Tobiasson was surely the biggest man in Greenland. But he was a pip-squeak compared to the DEW-Line radar station he had been summoned to heal: the 3,300-ton station stood above the snow like a sports stadium on stilts. Yet, it was no more than a dot on the wind-blasted glacial plain. And the ice was threatening the station.

Finished in 1960, the station rested on eight legs that extended down 32 feet through the ice cap's snowy top layers to the compressed snow and ice beneath. But, with maybe four more feet of snow accumulating each year, in 17 years the snow around the station had risen more than 65 feet.

"Ever since it was built we'd been lengthening the station's stilts and raising it up to squeeze out another five years of life," says Tobiasson. "And we'd been sort of concerned, because as those stilts got longer and longer, the station got wobblier, just like a table with long legs."

Finally, with the legs more than 100 feet long, the patient had reached a crisis. Shifting and flowing, the glacial ice was distorting the station's supports.

The CRREL engineer proposed major surgery: why not sever the huge station from its legs, move it 210

Trying to crack the cold's unknowns

With Mount Washington Observatory, CRREL's Kazuhiko Itagaki runs tests on helicopter tail section.

William Quinn, holding pavement core sample, heads team looking at how frost affects South Balch Street.

feet across the snow on "railroad tracks" of steel girders, then resettle it on new legs for a fresh start?

"Now there have been a few buildings and objects bigger than that moved by mankind, but not many," says Tobiasson. "We certainly didn't want it to fall down so that CRREL would be remembered, not for the good research we did, but for the building we tipped over onto the snow in Greenland."

But months of tests at the lab and on the ice cap paid off: the big station slid across the ice as smoothly as a seal (pp.108-9). In fact, the facility continued to do its job throughout the two-week journey, trailing a 210-foot umbilical cord of fuel and sewer lines.

Greenland is familiar turf to old CRREL hands like Wayne Tobiasson. And some of the laboratory's senior staff were professionally "weaned" on the Greenland glacier. Or, more precisely, under it in a weird settlement nicknamed "the city under the ice."

Camp Century, its official name, was 100 miles east of Thule as the Sno-Cat crawls. And it was straight from *The Empire Strikes Back*: out on the mile-thick ice cap, construction workers had dug wide trenches into the "firn," the snowy top layer, and then roofed them over. Inside the tunnels they built houses, workshops, even an atomic power station—a self-contained city under the drifting snow.

Long abandoned, the "city under the ice" has vanished, except for a 200-foot-tall radio antenna that still pokes up through the rising snow. And CRREL engineers and scientists who worked at Camp Century now find their interests extending far beyond Greenland: CRREL scientists helped design the Martian lander.

Various coatings and paints have been applied to see which keep ice from forming and are most durable.

On Mount Washington, CRREL has studied buildup rate of feathery rime ice, seen on building, right.

CRREL's facilities for such research draw information-seeking scientists from around the world to the New Hampshire laboratory. Some stay permanently. Currently on the staff are researchers originally from England, New Zealand, Japan, the USSR, mainland China, India and Canada. And visitors arrive daily from as near as the Massachusetts Institute of Technology and as far as the Swiss Federal Institute for Snow and Avalanche Research.

Malcolm Mellor, a CRREL research scientist and secretary of the International Commission on Snow and Ice, has inspected many Soviet research facilities and northern construction sites. He says that U.S. cold regions research may be ahead of the Soviets' in sophistication, but they have had more practical experience. "And so we have the basis for a trade-off," he says.

Soviet scientists have been visiting CRREL for years, bearing gifts of carved brown bears and bottles of vodka. And similar exchanges are beginning with the People's Republic of China.

Malcolm Mellor typifies the laboratory's international flavor. He is an Englishman who became a cold regions enthusiast while mountain climbing as an undergraduate; "It was a hobby that went wild," he says. Later, as an engineer in Australia, he got his crack at cold regions research, including an International Geophysical Year expedition to Antarctica, where he examined the ice sheet's "economy": income in ice and snow versus debits in the form of evaporation and iceberg production.

Today his work at CRREL illustrates the astonishing breadth of cold regions research: for Mellor works at the world's top, at its bottom and in between.

Currently he is designing machines for burying pipelines and cables on the seabed under the Beaufort and Chukchi seas off Alaska. Why? "Sea ice can develop a keel so thick it scrapes the bottom, gouging the seabed. Pipelines and cables down there are in trouble," says Mellor. Nestled in trenches, the cables will be safe.

In the Arctic he has developed techniques for exploding icebergs that threaten oil platforms. In the Antarctic he engineered a sequence of explosions that straightened the jagged edge of an ice pier, enabling a freighter to dock and pick up an ailing atomic power plant.

With other CRREL engineers, he is developing techniques for opening the Great Lakes to winter navigation, freeing ice-clogged channels and locks that connect to each other and to the Atlantic.

In working on winter navigation for the Great Lakes, researchers use CRREL's most unusual laboratory—the unique Ice Engineering Facility. Researchers here "play" with a flume, an artificial river (p.111). According to Guenther Frankenstein, chief of CRREL's Ice Engineering Research Branch, temperatures in the flume room can be dialed down to 20 degrees below zero so that frazil ice forms in the "river." But the flume also has a refrigerated bed so that the researchers can freeze the water from the bottom up, in effect

The author, who gets his share of winter in Vermont, wrote in the May 1980 SMITHSONIAN *about another "institution" in Hanover, Dartmouth's John Rassias.*

At test basin, cab operator James Sirois pushes sheet of ice against steel pile to test ice forces.

Guenther Frankenstein and colleagues will use model of Ottauquechee, 1/50th the river's size, to study ice.

turning a river upside down for convenient study of how flowing water interacts with ice.

Next to the flume is a test basin, an artificial lake, where underwater windows offer a trout's-eye view. Here engineers working on Great Lakes winter navigation have developed a variety of ice-fighting weapons: underwater bubblers which create a turbulent curtain that keeps ice from floating into canal locks, 12-foot-long saws for cutting ice from lock walls, chemical coatings that discourage ice from sticking to the locks. But the basin has many other uses, too.

Recently, for instance, a scale model of the Coast Guard icebreaker *Polar Star* crunched its way through the frozen basin. The sleek new *Polar Star* had a serious disability: ice broken off by the bow would drift aft and clog the propeller. CRREL engineers helped the Coast Guard design baffles around the bow that push ice away, keeping the propeller clear.

Next door to the basin is a cavernous room, the "Research Area," where engineers build hydraulic models. But these models are enormous.

Currently the room contains a model of one lengthy stretch of a Vermont river, the Ottauquechee (above). "Last month, this was Lake Huron," says Guenther Frankenstein, watching his colleagues erect concrete block walls and plywood forms to shape the riverbed, 1/50th the size of the real Ottauquechee.

"We're modeling a section of the river that we studied for three years, until we knew every stone," says Frankenstein.

Building such an extensive model takes six months. Compacted sand fills up the plywood forms, with concrete grout and fiber glass plastered over the top, precisely duplicating the actual river's shape and flow. When all is ready, engineers will drop the room's temperature to freezing. Ice will jam the model river, just as it clogs the real Ottauquechee.

The experiment's aim? To study ice formation and ice jams. And to develop techniques for preventing jams and breaking them up.

For example, CRREL has studied the Allegheny River at Oil City, Pennsylvania. "If we could have modeled, maybe experimenting with new channels, we might have cured the jams for half-a-million dol-

12 YEAR OLD BLENDED SCOTCH WHISKY, 86.8 PROOF. BOTTLED IN SCOTLAND. IMPORTED BY SOMERSET IMPORTERS, LTD., N.Y. © 1981

Many CRREL scientists worked at Camp Century. Here, researchers measure tunnel deformation.

lars instead of multimillions," suggests Frankenstein.

In their shoot-outs with ice jams and other cold-weather demons—from permafrost along the Alaskan pipeline to Florida frosts—CRREL engineers and scientists rely on intelligence data gathered during their far-flung projects. After years of snooping, they know ice and snow's chilly secrets down to the molecular level. And the enemy turns out to be more complicated than most of us think.

"Freshwater ice alone comes in dozens of different forms," says George Ashton, chief of the lab's Snow and Ice Branch. "Columnar ice, corn-snow ice, dendrites, black ice, brash ice . . . it's a long list."

Sea ice's structure is different from its freshwater cousin's, he adds. And it, too, changes in structure depending on such factors as age and brine content. Crystals at the bottom of the Greenland glacier may be centimeters in diameter, while younger crystals at the top of the ice sheet are only a millimeter across. The reason? Ice crystals grow, big crystals eating little crystals.

"It's an annealing process. One reason we study ice and snow is because the processes are similar to metallurgy, with the advantage that this material is mostly near the melting point, and so at a temperature easier to study," says Ashton.

Uses for such knowledge?

Icing on helicopter rotors can send the machines thrashing to the ground. Now, for the first time,

DEW-Line station on Greenland ice cap was moved 210 feet on girders and then resettled on new legs.

CRREL researchers can tell aircraft designers how fast rotors and wings will ice up under various atmospheric conditions.

Roofs take a beating in cold weather. So CRREL engineers developed an infrared photography technique for pinpointing leaky spots and used it on one of their own roofs so that the entire roof need not be rebuilt. It's already saved the government hundreds of thousands of dollars, and now private industry is using the technique.

CRREL engineers also use the scientific data to

Glacial flow threatened old supports, lengthened more than 100 feet to keep structure above snow level.

improve road construction. They helped design the Alaska pipeline (elevated over half of its length so the warm oil would not thaw the permafrost). And now they are helping with the design of the new natural gas pipeline that will come down from the Arctic: it carries a chilled fluid and will have problems where it crosses thawed soils.

But many projects in the CRREL labs are pure research. The aim is simply to learn more about the planet on which we live.

Recently, for instance, in one of the laboratory's frosty workrooms, geologist Anthony Gow and physicist Stephen Ackley, both wearing fur-trimmed parkas, huddled over a polarizing device. Through the view plate they examined a slice of Antarctic sea ice, each of its crystals glowing a different color of the rainbow in the polarized light.

Gow and Ackley study the physical properties of polar ice. They had collected the sliver of ice months earlier in Antarctica's Weddell Sea.

Plowing through the ice-infested water aboard a big Coast Guard icebreaker, they ignored the towering icebergs—broken-off bits of Antarctic glacier, maybe half the size of Rhode Island. They were interested in the floes (floating sea ice) that dotted the gray water like lolling whales.

Jumping onto the ice from the ship's orange Sikorsky helicopter, the wet-suited scientists drilled out samples with a hand-powered auger. Some of the floes were as big as Manhattan, some as small as a dance floor. "One 'copter pilot would land on stuff so small you wouldn't want to jump out," says Steve Ackley.

Trips of the trade

Antarctic work can be tricky. On one expedition Ackley stepped onto a deceptively solid-looking strip of snow atop an iceberg and found himself plummeting. Luckily, the crust caught him when he was waist deep. "When I climbed out and looked down, I couldn't see the bottom of that crevasse," he says.

Why so much effort to collect chunks of ice?

Weddell Sea ice, the scientists had discovered, is twice as thick as ice of comparable age in the Arctic. And it turns out to have a surprising crystal structure.

"Usually sea ice crystals are long and columnar with a typical distribution of salt pockets, but these crystals were tiny," says Tony Gow.

The crystal structure was typical of frazil ice, a type of ice usually found in rivers, not in oceans. "When a river moves too fast to freeze, tiny crystals form and float downstream," says Gow. "Where the current slows and there is a skin of ice overhead, the crystals float up and form a mush underneath the top ice, which then freezes solid, retaining its tiny crystals."

Why is "river ice" forming in the ocean? Ackley and Gow suspect some as yet unknown turbulence is at work. But the puzzle may involve the vegetable kingdom, as well.

Kurt Buck, a young CRREL biologist, has found that the sea ice is buzzing with life. "You can see it when you're down there," he says. "A ship bursts through the ice and sprays brown diatoms, single-cell plants, in all directions." He finds that the ice also is home to other microscopic algae—flagellates and dinoflagellates, and probably bacteria, too. Ackley and

Gow believe these microscopic ice riders, falling into the water, may become the nuclei for the crystals of frazil ice.

What does it all mean? "I wouldn't want to make any grandiose claims, but that's research," says Steve Ackley. "We may wind up with something interesting, but totally useless."

Not necessarily, however. For one thing, many nations are now looking to the krill, tiny crustaceans that swarm in Antarctic waters and feed on the algae, as a food source. The potential harvest is up to 100 million tons per year, exceeding today's total world fish catch. "It's a very important food chain, and the role of diatoms in creating frazil ice could be part of it," says Tony Gow.

Also, frazil ice is tougher than ordinary sea ice. That has implications for oil-drilling rigs in areas off Alaska where frazil ice has also been found. And the ice could even affect weather and climate. Because the frazil ice is thicker than ordinary sea ice, it keeps the air overhead cooler, say Ackley and Gow. And that may affect global patterns of air flow.

But while some researchers, like Ackley and Gow, spend much of their time in the world's nether regions, others find that the harsh New England winter makes an excellent outdoor laboratory. And not all CRREL studies have a global sweep.

For instance, puzzled Hanover residents have been watching CRREL engineers probe the town's Balch Street for several years. Look out your window at odd times and there they are, the men from the lab, taking samples of asphalt, measuring, giving Balch Street the scientific star treatment (p.104). Hanover residents have wondered why.

The answer? Balch Street is a pothole test site. And this humble byway has proved a tough nut to crack even for those who have met the challenges of the trans-Alaska pipeline and the sea ice in Antarctica.

"I'd hate to promise a solution to the pothole problem," says William Quinn, chief of the lab's Geotechnical Research Branch, morosely. "We're just now beginning to get into studying potholes."

Dodging whizzing cars on Balch Street is only one hazard cold regions researchers face. They have their own peculiar traffic mishaps.

Physicist Stephen Ackley, for instance, researching ice movements north of Alaska in the Beaufort Sea, once zoomed out across a solid-looking patch of ice in a snowmobile only to find that a coating of crystallized brine—"salt flowers"—had made thin ice look thick. The snowmobile cracked through and nose-dived down some 10,000 feet of water. Ackley rolled off.

"I did the quickest overarm stroke of my life," he remembers.

What happens when you get wet at 30 degrees below zero? "You get cold," says Ackley. Fortunately, a helicopter was only a radio call away.

On another Arctic Ocean expedition, the adventure-prone physicist had an even closer call. He and a teammate had pitched their tent miles from the base camp while they awaited a Navy photographic plane. Ackley was inside when he heard his friend say, "You better come out and look."

Two polar bears were scampering over the ice toward the camp.

"The bears were stalking us as if we were seals," says Ackley. "They'd run up, then plop down on the snow and cover the black spots of their noses with their paws, then jump up and run closer."

"I'd better check my pistol," his partner said, and darted into the tent. Coming out, he tripped on the sill and buried his .357 magnum deep in the snow, where it stuck. Meanwhile, the bears were galloping in. Ackley reached for the only weapon he could think of—an emergency flare for signaling the plane.

With a whoosh, the orange smoke billowed out across the ice. And the two men shouted in voices they hoped sounded threatening.

Seconds later the smoke cleared. And the bears were gone.

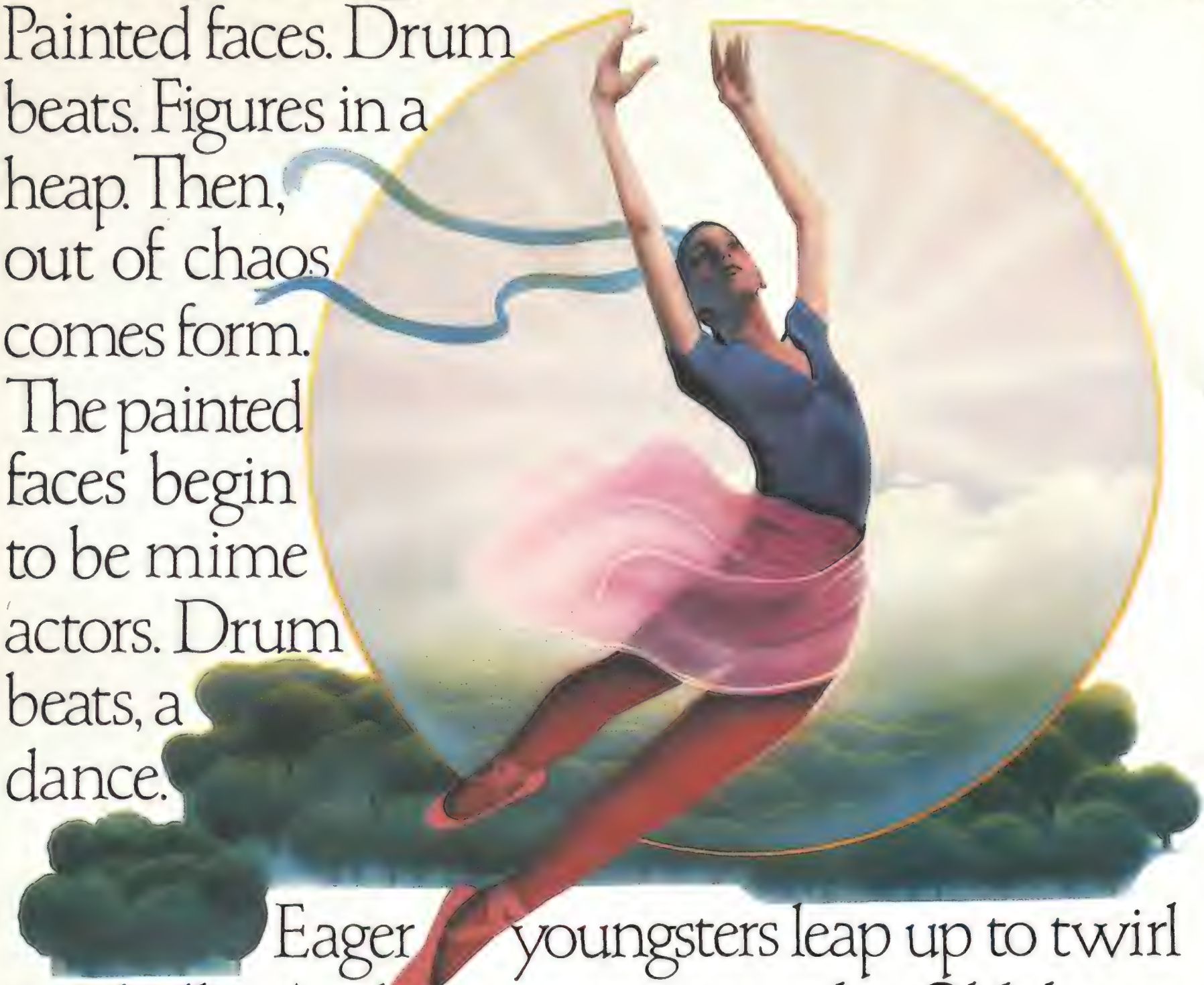
Polar bears aside, winter is tough to research. Even dedicated cold regions scientists who like snow and ice the way ornithologists like warblers sometimes have second thoughts.

"One of the very nice things about going to Antarctica," admits Malcolm Mellor, "is that you get to go through all the tropical regions to get there."

Ross Perham, left, and Thomas Tantillo dip strings in flume for frazil ice tests in lab held at 14 degrees F.

The young must try their wings.

Painted faces. Drum beats. Figures in a heap. Then, out of chaos comes form. The painted faces begin to be mime actors. Drum beats, a dance.



Eager youngsters leap up to twirl into ballet. And one more time the Oklahoma Summer Arts Institute has worked its magic. Here at Quartz Mountain, teenage winners of a state-wide competition bring their talents to be polished by encouraging instructors. Dance. Acting. Music. Writing. Visual Arts. It's work and it's fun. And Phillips Petroleum gladly gives to its support. Not for money. Just for a song. PHILLIPS 66

For more information write the Oklahoma Summer Arts Institute c/o State Arts Council of Oklahoma, Room 640S, Jim Thorpe Bldg., Oklahoma City, OK 73105

Diane Flyr's 1980 *Tea Party Teaset* conjures up March Hare's tea party of 1865. Thrown and hand-built porcelain, it has transparent glaze.

Witty and pretty, vital, exotic—it's American porcelain

A broad spectrum of creativity marks the work of 108 ceramists, now on exhibition at Renwick

The Chinese, 700 years ago, dazzled Marco Polo with the silken luster, translucence and bell-like tone of a remarkable ceramic. In the 16th century the Medici, determined to probe its mysteries, subsidized an artist in Florence, who, briefly, created a reasonable facsimile. The English tried, and so did the French. But not until 1708, in the realm of Augustus the Strong, King of Poland and Elector of Saxony, was the first hard-paste, or high-fired, porcelain created in Europe. (Marco Polo had called it *porcellana* because it reminded him of a cowrie shell.)

Augustus had such an appetite for Chinese porcelain that his chancellor of the exchequer, Count von Tschirnhaus, feared it would bankrupt the kingdom. The Count, also a brilliant physicist, secured the release from jail of a young alchemist, Johann Friedrich Böttger (who was being detained for having failed to turn base metal into gold). Their location of the proper clay and fusible rock and successful collaboration in working out a formula resulted in the establishment of the Royal Saxon Porcelain Manufactory in Meissen in 1710. Soon all Europe was in on the secret, but not until the 19th century was this finest and most difficult of ceramics manufactured in any quantity in the United States.

A couple of years ago Lloyd E. Herman, director of the Smithsonian's Renwick Gallery, began wondering what was being turned out by American ceramists working in porcelain. Now he has his answer, and it fills three rooms. "American Porcelain: New Expressions in an Ancient Art" contains 108 of the best examples—the gamut from delicate teacups to a huge wall hanging of a samurai duck, from graceful tureens to ocarinas in the form of a fish and a foot, from elegant vases to architectural spaces. (The exhibition will continue until August 16.)

Porcelain consists of two principal ingredients, which the Chinese call its "bones and flesh": kaolin, a special clay, difficult to handle but producing a distinctive creamy whiteness and great strength; and feldspar, a siliceous mineral that fuses with kaolin at 1,280 degrees C, and lends translucence.

There are three traditional, basic techniques used in forming porcelain, all calling for great manual dexterity and control. "The smallest cut or curve in porcelain will stand out to represent a movement frozen in time," says Diane Flyr (above). All three are represented at the Renwick; a number of pieces incorporate more than one method. Artists' preferences seem about equally divided between throwing on a potter's wheel

and building and shaping by hand. The former produces a symmetrical vessel of uniform thickness; the latter one with pleasing asymmetry. Quite a few porcelains were created by the third method: pouring a slip (liquefied clay) into molds.

Shape and subject sometimes astonish, but creativity gone wild shows up in the assemblages: fabric coatings, extrusions, carving and piercing; inlaid, appliquéd, painted and penciled decoration; stains, decals and a rainbow of glazes. Objects are burnished, polished and sandblasted. And some are simply unglazed.

A number of artists, like Bruria (p.116), find porcelain an ideal surface for embellishment—it "complements the sense of mystery I sometimes seek to create."

There are many fresh and innovative ideas. Take what appears at first glance to be a handsome chunk of casually knotted, creamy muslin. It is Virginia Budny's illusionary *Summer Flower III*, hand-built paper-thin sheets of unglazed porcelain. Inspiration for Laura Peery's attenuated slippers (opposite) came from a book, *The Sex Life of the Foot and Shoe*.

"Porcelain best represents the pure delicacy and rare beauty of salmon in nature" to Liza Halvorsen; real salmon were models for her smolts and mature fish.

Richard T. Notkin, who has been an artist in residence at the Kohler Company in Wisconsin, has used industrial porcelain to cast *Wall #4*, a testament to our times. It represents the blank wall of a building from which the adjoining structure has been ripped away, leaving a tracery of stairs, floors, crumbling plaster and sagging plumbing.

Mona Brooks' ceramics make wry social statements (p.116). "When somebody's face lights up with a smile . . . I feel great because I know we communicated."

A feeling that porcelain "practically begs for sensitive treatment" is translated into the refinement and spare, flowing lines of Scott Malcolm's ovoid *Bottle*. The piece is sculptural, but so are many lovely porcelains of utilitarian intent, such as the beautiful *Pie Dish with Embossed Ibis*, cast and thrown by Paul and Lucy Natkiel, or James Makins' sleek *Cups and Saucers* (right).

Perhaps former painter, now ceramist, Eileen Richardson best summed up the case for porcelain when she said, "Can you imagine the angels drinking from cups of stoneware or earthenware?"

—Jane D. Scholl

Classy *Art Nouveau* siren slinks across hand-built jar by Laura Wilensky, who prizes porcelain as "canvas for colors."

James Makins infuses useful objects such as these celadon-glazed *Cups and Saucers* with beauty and grace.

Long-toed medieval shoes, or *poulaines*, suggested Laura Peery's wistful work, *Wall Flowers at the Last Dance*.

Thinking About Self-Portraits culminates Charles Fager's series about reflections.

Childhood tales inspired tiny creatures on Coille Hooven's *Magic Acorn Tureen*.

Desert Landscape combines wit and fantasy. This hand-built, unglazed sculpture is by Frank Fleming.

Personal expressions in porcelain are (clockwise) Lizbeth Stewart's *Knee and Fan*, Jack Earl's narrative sculpture, the dour people and grinning animals jammed into *Motorcar* by Mona Brooks, Bruria's unsettling *Dream Sequence* and the star-spangled *Cowboy Boots* of William Wilhelmi.

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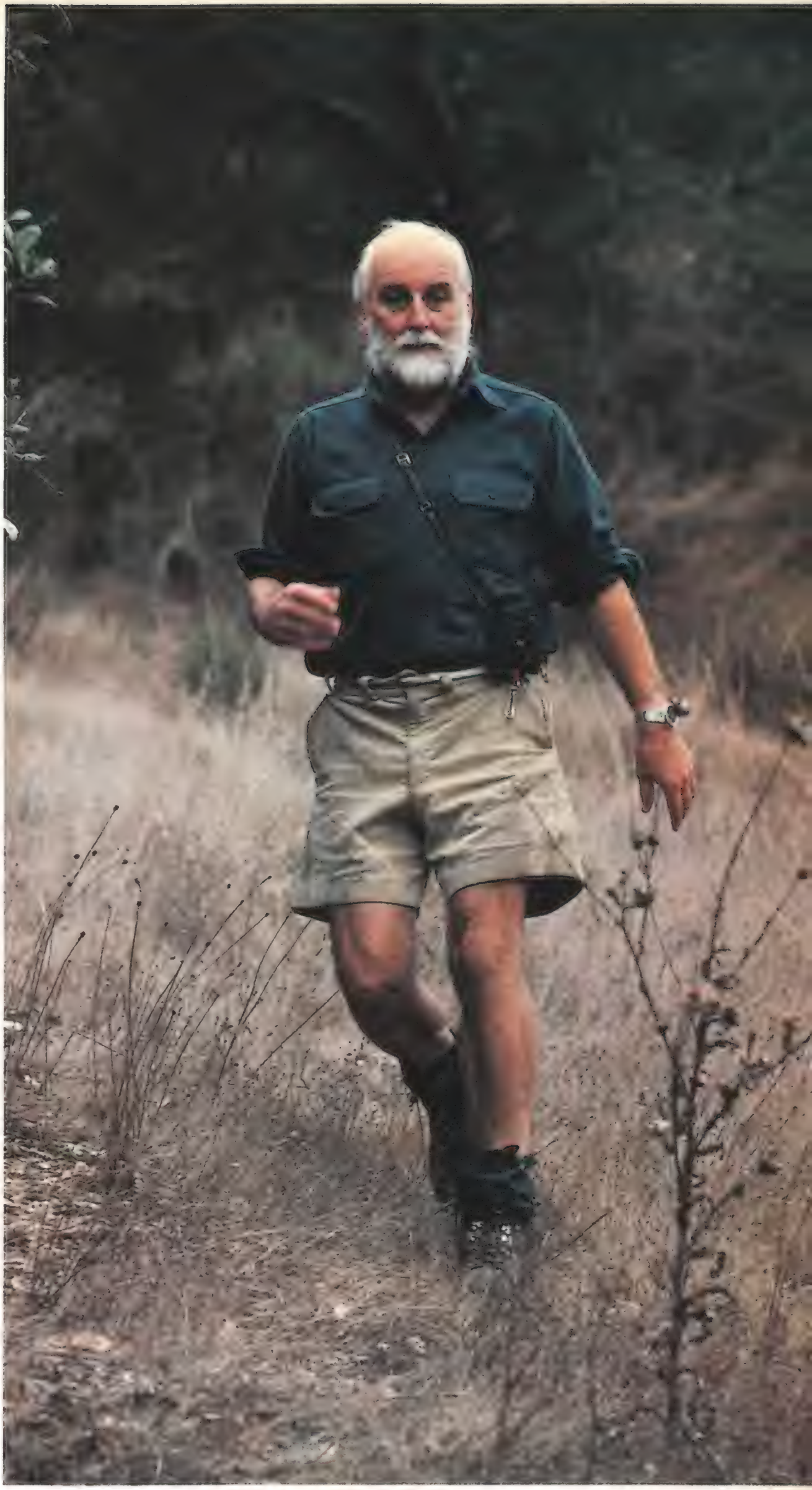
By Donald G. Schueler

The strange quest of the man who walked through time

Colin Fletcher, author of the classic backpacker's bible, spent a decade tracking down a mysterious 'cave' man

Colin Fletcher, the high priest of American backpackers, has always been a specialist at going it alone. The tales of his epic peregrinations from one end of California to the other (*The Thousand-Mile Summer*) and through the Grand Canyon (*The Man Who Walked Through Time*), as well as his how-to-do-it *The Complete Walker*, have made him the most famous solitary walker in the world.

But in his detachment from ordinary human ties, Fletcher can sometimes be a bit extreme. During the last decade, for example, his most absorbing relationship has been with a long-dead man whom he never met, whose identity he still cannot positively certify after an intensive ten-year search. *The Man From the Cave*, to be published this spring by Alfred A. Knopf, is his account of that peculiar quest and is an adventure of a different sort: a journey through dusty files and fading memories in search of the identity of an obscure prospector who also liked to walk alone. It begins in 1968, when Fletcher discovered a hidden cave (p. 122) during one of his long strolls through the more unreachable reaches of the Nevada desert. In and about the cave was the evidence of long-ago occupancy—a folding chair, a "sheepherder's" stove, animal traps, the fragments of 50-year old magazines and newspapers and an empty trunk (p. 126). Intrigued by his find, Fletcher returned to the site a year later for a longer stay. He reassembled the camp and presently began to enter into the life of the anonymous "Trunkman" (his nickname for the faceless soul who had once



Looking every inch the dauntless outdoorsman, Fletcher strides across a grassy slope near his secluded home in California ("Please, no address").

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Brookstone

The quintessential backpacker, Fletcher reaches summit of Mt. Shasta in 1964.

lived there), bemused at first, obsessed later on, by the "selective process" that had drawn that other walker and himself to the same remote place, linking them across half a century like a father and son who had never met.

When he returned to civilization, Fletcher wrote an article about his find for the *Las Vegas Sun*, offering a $100 reward for information concerning Trunkman's identity. Reprinted in the *San Francisco Chronicle*, it produced an important lead in the lively person of one Grace Mazeris, a former singer, stunt rider and companion of many men, then 80 years old and living in reduced circumstances in a Santa Cruz hotel. She informed Fletcher that during the early 1930s she had "taken up" with a part-time prospector named Bill Simmons (p. 124), living with him in the desert near Palm Springs, California. She had liked Simmons, a "gentleman" and a "good lover" but a man who "didn't give himself up easily." She stayed with him for a couple of years before moving on to another place, another man. Still, she remembered enough about her former paramour, including his references to a "camp" in Nevada where he had once left a trunk and other belongings, to more than half convince Fletcher that her Bill Simmons and his Trunkman were one and the same. The fact that she saw a resemblance in kind between Simmons and Fletcher did not hurt her case.

Coast-to-coast sleuthing

The conversation with Grace became the first installment in a protracted search for Simmons/Trunkman which, for sheer obsessiveness, makes Fletcher's feats as a walker seem only mildly compulsive by comparison. Beginning with the clues that Grace provided, he painstakingly followed Simmons' documented life from the recorders' and coroners' offices of obscure desert towns to the National Archives in Washington, D.C. Along the way he ransacked the memories of aging prospectors and Simmons' scattered kin, and haunted the places Simmons had known, from the Pennsylvania town where he was born to the whistle stops in the California desert where he spent his last years.

By the time the search was over, Fletcher had collected enough evidence to indicate that Simmons was probably, though by no means certainly, Trunkman and Simmons' life story had become the focus of his interest.

The reader of *The Man From the Cave* will almost certainly wonder why. Born in Pennsylvania mining country in 1875, Simmons spent most of his young manhood in the Army, taking an unexciting part in the Spanish-American War and eventually going over the hill. He drifted West, possibly married a Seattle woman who made a cuckold of him, then turned up in Nevada and perhaps, in 1916, he had lived in that hidden cave, leaving behind the artifacts that Fletcher would find some 50 years later. He spent the remainder of his life in the California desert prospecting, working as a mining-camp cook, gambling and boozing. His last years were a gentle, alcoholic fade-out in the environs of Palo Verde.

All the evidence suggests that he was an unexceptional drifter "who could be a bit of an ass at times, even quite childish, yet of whom most people said, 'You couldn't help liking him.' " In Fletcher's imagination, he also became a man alienated from the technological world and,

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perhaps, from his father, as well as a casualty of love (which might have explained his interlude in the cave). More than anything else, he was "a man who chose freedom."

None of this quite explains Fletcher's heroic yet quixotic desire to "rebuild" Simmons' life. In *The Man From the Cave*, Fletcher plays hide-and-seek with his own motivations. Mostly he is content to note parallels between his quarry's life and his own: "We were both wanderers who worked at other jobs until able to devote ourselves to what we really wanted. . . . We both came to the desert late, because of women, and both discovered there that life re-began at forty-one."

Yet, excepting the penchant for desert wandering, these "congruencies" are anchored to the reality of Simmons' life only by the thinnest threads of evidence. Furthermore, Fletcher's fixation about Simmons/Trunkman was off to a running start even before most of the evidence was in. One thing is certain: the most interesting and elusive man from that cave—the one worth searching for—has got to be Colin Fletcher.

If possible, Fletcher is even more obsessive about privacy than about Trunkman. It is not simply a matter of guarding a phone number or an address ("Say I live within a three hours' drive of San Francisco"). If he could manage it, he would keep half of California to himself.

"You mean," I complain, "I can't even mention what wilderness we're hiking—walking—in?"

"Well," he concedes, "you could say it's in the California coastal range. I don't want to sound extreme, but if you mention the name in print it will bring more people up here, won't it?"

Fletcher speaks over his shoulder. For most of the morning, my view of him has consisted of his corduroy shorts, the pack strapped to his shirtless torso, the powerfully calved legs that have helped make him a specialized celebrity, and the boots moving steadily up the narrow trail. It is hard to argue with a man's backside. Still, I am obliged to point out that Fletcher's tendency to hoard whole wildernesses smacks, at the very least, of inconsistency. His books continue to lure hordes of panting Americans into remote places where they are likely to encounter self-awareness, cosmic insights, poison oak and, all too often, one another.

The discrepancy between his alternating roles as guardian of the wilderness and chief proselytizer of its charms is not lost on Fletcher; he assures me that "it is a question I want to grapple with in my writing." Which does not prevent him from grappling with it verbally while ascending a very long 60-degree slope that leads us even higher into the moun-

This cave (entrance is shadowed opening, bottom, center) in a desolate section of Nevada held intriguing clues that sent Fletcher on lengthy search for occupant.

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tains. "I salve my conscience," he explains in his crisp English voice, "by not writing in terms of specific places anymore. And I do encourage people to behave properly when they're in the wilderness. But still, you know, I'm not sure my self-defense isn't bogus."

I am surprised at Fletcher's volubility. (He never "hikes" and almost never "backpacks" because those words have a phonetically compulsive ring.) But Fletcher seems not to mind my presence or his own voice. Perhaps the setting accounts for this unexpected sociability: the slopes are steep but shadowed by an open, parklike forest; the ravines, though deep, are cushioned by beds of enormous, soft-looking ferns.

I ask Fletcher the name of a dramatic tree along the way. Its branches are as copper-smooth as an Indian baby's skin except where a thin epidermis has peeled back into long curling ruffles. "A madrona," he replies. "A magic thing. When the old ones die, the young ones grow up in a circle around the stump. Sometimes there is a perfect fairy ring. You can almost see, oh, Alice in Wonderland sitting in the middle."

Curves, yes; "man-crud," no

Fletcher's response to nature's furnishings is almost always a pantheistic marveling. His god, if he has one, is "a space-age Pan." Indeed, his devotion often takes on emphatically Panlike intonations: "The great beauty of scenery can be, well, rather sexual. . . ."

Yet these anthropomorphic intimations can be misleading. Shoulder to shoulder with the sensualist and the esthete stands Colin Fletcher, Misanthrope. "Look," he exclaims, "there are no straight lines. That's important! I want a place Man hasn't touched. Or at least one that I can kid myself he hasn't touched." He dislikes "man-crud," an epithet that covers the ugly efflorescence of technological civilization. When he looks "at the planet as a whole," he regards "the inevitable collapse of industrial society as a basis for optimism," although he would prefer "a fairly gradual decay of law and order" to a nuclear holocaust, since in the latter case "the fallout would affect things other than human." These sentiments have not quite made a hermit of him, however. There is a "girl friend"—there almost always has been one—who is independent enough to live 150 miles away, and there are a very few close friends whom Fletcher welcomes "on my own terms."

We have reached the top of a ridge. The trail slips over it and begins a sharp descent. From below, through the golds and browns of the dry October forest, there is a welling up of shadowy blues and greens, and the inviting sound of water on rock. A few minutes later, we have arrived at one of Colin Fletcher's most secret places. A small creek falls into a small pool, lichens and moss blanket fallen logs and boulders, a marginate of ferns and aromatic California laurel crowds the water's edge.

Fletcher fills stainless-steel cups with water at the pool and rummages in his pack for the freeze-dried chicken-salad mix and food sticks that will be our lunch. Now that we are face-to-face again, I am reminded that he is a very striking-looking man. The previous morning, when I first saw him at a distance, coming from his house to meet me, he had brought to mind an unusually fit-looking Santa Claus on his day off—ruddy complexion, white hair and beard and, for contrast, dark vaulting eyebrows. However, a closer look dispels any notions of ho-ho joviality, especially when his astonishingly blue eyes have got one's range. They project a disconcerting combination of intensity and detachment, the look one finds in the eyes of raptors and illuminati.

Fletcher turns his fire-and-ice stare in

Simmons once cooked for mule-drivers' camps. His specialty: Spanish rice.

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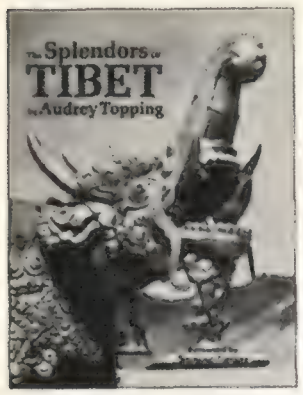

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my direction and then, looking away, remarks, "You know, I've tried to keep myself tabula rasa for this inquisition, but it occurs to me that you haven't asked me anything about Trunkman yet."

Dutifully, I ask the obvious: why the manhunt? Why did it become an obsession? "I felt I understood Trunkman where no one else did," he replies, then backs off. "Why did he fascinate me so much? The answer would interest me. But then, I'd distrust anything I said." Clearly, Fletcher is wary of excessive psychological probing. In another context he had earlier observed, "Plato says that the unexamined life is not worth living. My riposte is that the overexamined life is not lived at all." Now it strikes me that the search for Trunkman may have been his way of living his life and examining it, too.

Fletcher has never been in a great hurry to find out who he is supposed to be. Whether or not Trunkman's life "re-began at forty-one," there is no doubt that Fletcher's did. The official beginning, however, was in Cardiff, Wales, in 1922.

Simmons' empty trunk prompted Fletcher to name his elusive prey "Trunkman."

A "magic" Welsh heritage

The Welsh, as everyone from Shakespeare to Dylan Thomas has assured us, are a magic-ridden people, given to premonitions, lyrical outbursts and a romantic rapport with the natural world. In Fletcher's case, these traits should theoretically have been tempered by a sober Anglo-Saxon inheritance on the paternal side, but in fact his English father was the real will-o'-the-wisp, deserting his family when Colin was four years old in pursuit of some private destiny in the Canadian hinterlands. The doting Welsh mother proved the more down-to-earth parent, sending her bright but already "standoffish" son to an English boarding school when he was 12. "She was a great girl," says Fletcher. "I wish I had known her better. She died when I was 21."

A year later, Fletcher, along with hundreds of thousands of other young men, embarked on the Allied invasion of Normandy. He served as a commando, saw his comrades die and had his own share of close calls. But for him "the war was not a terrifically scarring experience," or even a maturing one. "In some ways," he says, "it left one rather juvenile."

This may explain his first marriage and the six postwar years he spent in East Africa, working by turn as a manufacturer's agent, hotelkeeper and farm manager. None of these occupations, or his marriage, worked out. When he left Kenya in 1952, the greatest legacy he carried with him was the conviction that he would be a writer.

By the close of 1953, Fletcher had bummed and odd-jobbed his way across Canada without any conscious idea of where he was going or what, besides writing, he wanted to do. However, if there were not some Telemachian motive in this odyssey, there ought to have been. One day, as a result of one of those "selective processes" that transcend coincidence, Fletcher and his truant father found themselves, unbeknownst to each other, playing on the same pitch-and-putt course in Vancouver, British Columbia. The reunion that followed had an impossibly British ambience: Fletcher *fils* recognized his father (they had met briefly at the end of World War II) and when the latter knocked a ball in his direction, he took it as a sign that he must introduce himself. "Excuse me, sir," he said, "I don't think you know who I am." "No," his father replied, "but I think I ought to." "Colin," said Colin. "Do you know," said his father, "I believe you're right." Unsurprisingly, this cool encounter was an end, not a beginning. When, a few years later, the senior Fletcher died, his faraway son "felt almost nothing."

By then, Fletcher was in San Francisco. He had met a young woman there and was very much in love. Recollecting this period, he becomes visibly agitated. He arranges and rearranges himself against a lichen-covered boulder. "This was a very big deal for me," he says. "I had to

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Reconstruction of Simmons' "dinner table" at cave he occupied in 1916 shows can labels still unfaded, delicate toggle sticks (foreground) used in animal traps.

decide whether to marry her, you know? I still don't know why, if we were so happily coupled, I felt I had to go far away to think it all out. All I know is that I woke up at three o'clock one morning and decided that if I walked from one end of California to the other, it would solve all my problems. Doesn't make much sense, does it?"

Actually, it did. Until that small hour of the morning, Fletcher's life had been composed mostly of loose ends. To borrow a figure from Lewis Thomas (SMITHSONIAN, April 1980), one of the few current writers whom Fletcher admires, his assorted selves had never held a committee meeting to find out how they could work together. Now, however, the writer in search of a subject, the wanderer in search of a destination, the loner in search of a "religion" that would sublimate his self-protecting egoism, were all lining up, at least for the time being, behind a newly evolving self—one for whom the journey would be the destination—to wit, Colin Fletcher, Walker.

Fletcher had always done a lot of walking, but it had never been a compelling enthusiasm much less a vocation. Now it suddenly was.

The description of his majestic journey first appeared in installments in the *San Francisco Chronicle* and later, more elaborately, in *The Thousand-Mile Summer*. As a writer, Fletcher was at long last on the ascendant turn of fortune's wheel. At the same time, however, the would-be husband was riding for a fall: while he was making up his mind to marry the girl, the girl was unmaking hers. There was a marriage, but it lasted scarcely a month.

"Breach of trust can be a terrible thing," says Fletcher, broodingly sipping from his stainless-steel cup. "I had never been rejected before" (he discounts publishers and his father) "and it killed me."

In this murdered state he returned to England. He prescribed himself a trek from Land's End to Hadrian's Wall, but it didn't help. He buried himself in an ancient Sussex house, "a funny little funk hole called Starve-Crow, which seemed appropriate." There he worked on *The Thousand-Mile Summer*. There also he was gripped one evening by the stunning, late-blooming realization that "By God, I was expendable! It was an incredible discovery for an egotist like myself. It was a *huge* new freedom!"

Nevertheless, when he returned to the United States in 1962, Fletcher was still among the walking wounded. Fortunately, the necessary therapy was at hand: where a stroll through the scepter'd isle had failed, an unprecedented ambulation through the Grand Canyon would do the trick. Fletcher had his first look at the

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Canyon on the way back to the West Coast and promptly dreamed of walking it. "Other people have dreams like that," he explains, "but I carry them out."

The eloquent account of that carried-out dream would become the best-selling *The Man Who Walked Through Time.* In the same year, 1968, the even more successful first edition of *The Complete Walker* was published. Fletcher suddenly discovered himself to be the reigning guru of all backpackers and, for the first time in his life, a very solvent man. *The Man Who Walked Through Time* records his self-surrender to the annihilating disinterestedness of one of the world's most formidable landscapes. It does not record the fact that the self that Fletcher surrendered was the rejected, downcast fellow who, four years earlier, had taken a very human gamble and lost. "Afterwards," he remarks, "I was not the same man I was before." As far as the "man-world" was concerned, he had come to terms with his most singular gift: the capacity to be willingly alone.

Trunkman, meet Vergil and Merlin

Three hundred feet above us, the hills are still shining, but our glade has settled into a premature twilight. Fletcher gets up, begins collecting cups and spoons and paper wrappers, stowing them in his pack. We are temporarily out of words, and for the first time the silence of the wilderness is something we can hear.

In that silence, my thoughts return to Trunkman. Why, after all, had Fletcher been so "fascinated" with him? Obviously he sensed in him a kindred spirit. Yet I am certain that if Fletcher had encountered the flesh-and-blood Trunkman/Simmons in that cave, rather than his vague ghost, he would have been annoyed to find him there, intruding on his own isolation. No, his search for that innocuous nomad had to serve a powerful, imaginative need: Trunkman/Simmons was meant to be Vergil to Fletcher's Dante, Merlin to his Arthur—the dependable, paternalistic guide who knows the way, whom all exiles, orphans, explorers and other loners sometimes wish for when they traverse life's more forbidding terraces and steep slopes. If Simmons had not existed, Fletcher might have decided to create him. He very nearly has. *The Man From the Cave* is halfway between biography and novel.

On 1958 1,000-mile California trek, Fletcher camped in White Mountains.

Most of the time, Fletcher prefers silences to human voices. He prefers trails to roads. He prefers walking to all other means of locomotion. He prefers the solitary craft of writing to any other creative occupation. He prefers the wilderness to any aggressively human space. All of these preferences have a common denominator: they are the personal declarations of independence of someone who either "chooses freedom" or has it forced upon him. For Colin Fletcher, the pursuit of freedom—the existential, not the political, variety—is the only valid quest of a meaningful life, examined or otherwise. He walks in wilderness "that Man hasn't touched" because he can "kid" himself that his response to it is as free and original as on the first created day.

Even death, the one unrecordable experience, can serve the purposes of the quest. Not long ago, Fletcher fell into a deep faint which seemed to be, but wasn't, a heart attack. In the ambulance, as his consciousness began to stir, his reaction echoed the moment at Starve-Crow when he realized the unimportance of self-importance: "I wanted terribly much to live, of course. But if I didn't, that was all right, too, I wasn't afraid to die. Knowing that was a very *freeing* thing."

Fletcher speaks of this experience when we are settled in his living room that night, facing a fireplace and, next to it, an expanse of glass through which the starless void looks in. In daylight there is a view of canyon oaks and beige hills, with nary a straight line in sight. This is hardly the wilderness (Fletcher lives in one of those spread-out California communities that he aptly calls "shrubburbias"), but the houses are tactfully ar-

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ranged so that they do not intrude on each other's views. Since Fletcher also exacts respectful silence from neighboring children and dogs, he "kids" himself that he lives in almost perfect isolation.

Above his living room fireplace is a large reproduction of Renoir's famous *The Luncheon of the Boating Party*, surely one of the most smiling celebrations of human conviviality ever painted. Fletcher "likes" the people gathered at that long-ago picnic. However, he has not chosen the painting for its sociable theme. Earlier he had asked me to notice "how the railing in the painting echoes the lines of the hills outside, and how the greenery matches my oaks perfectly." So much for the imagery of human intercourse. Fletcher the Esthete and Fletcher the Misanthrope are as one.

He smokes a forbidden cigarette. He stares out at the viewless view. It is 11 o'clock, past his bedtime. In many ways he is a creature of regular habits, indulged neuroses, small rituals (the time-honored means of keeping large freedoms, like genies, bottled, as they must be when one chooses to live with them). He declares himself "a hypochondriac," an ashtray emptier, a diet watcher. There are burglar and smoke alarms attached to everything; there is a taped, crooning voice that occasionally tells how to relax; there is a sign on the walk warning Jehovah's Witnesses and almost everyone else to go away.

Is he happy? "I am not happy with the word 'happy,' " comes the non-answer.

It is safe to say that Fletcher the Writer is not entirely satisfied with his professional life. There is a problem with the Walker image. Fletcher is only too aware that the Walker pays the bills. Now that he has exhausted the Trunkman obsession, he will come back to the role for awhile; a third revised edition of *The Complete Walker* is in the works, as well as a collection of essays on the natural world. He even toys with the notion of walking the entire length of the Colorado River "sometime in the next 150 years." (How many miles? "Miles? Oh, I have no idea. Miles are irrelevant. It's the hours that count.")

Yet, at close to 60, this perennially expectant, self-creating man has a lot more selves to try out, and the hours count. He may soon have to call another meeting to elect a different chairman. "To tell the truth," he says, "it riles me that I'm better known as a walker than a writer. Hell, I'm not a better backpacker than anyone else, I just write about it better." The wild, blue glance swings in my direction. "Of course, I would like to be a *great* writer," he explains with a pretend-modest smile. "You know, Colin Shakespeare." He pauses, then adds, "I do think I have one novel in me. . . ."

He has answered the question, after all. In the largest, freest sense of the word, he is a very happy man.

Packing out of Nevada desert with some of Simmons' belongings, Fletcher (left) carries the trunk while a park ranger follows him with the sheepherder's stove.

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ENGLISH SIDE CHAIR. Part of a suite of furniture made for the fourth and last Earl of Scarsdale about 1730, this walnut side chair, built in the style that became popular during the reign of Queen Anne, includes the family coat of arms on the back panel. Cooper-Hewitt Museum (*Furniture*)

CHINESE PORCELAIN VASE. Millions of pieces of porcelain have been exported from China to America. This vase from the Ch'ing dynasty, painted in red oxide and powder blue in the highly pictorial style of the K'ang-hsi period (1662-1722), is decorated with flowing figures of carp, the Chinese symbol for long life. Cooper-Hewitt Museum. (*Porcelain*)

PAUL REVERE SILVER TEA SERVICE. With its oval forms and engrave[illegible] decoration, here is an example of the neoclassical style silver from Paul Revere's workshop. Made about 1790. Metropolitan Museum of Art, bequest of A.T. Clearwater, 1933. (*Silver*)

TIFFANY FAVRILE VASES. Louis Comfort Tiffany's decorative glass styles were the finest produced anywhere. These free-blown Favrile vases were made at the Tiffany furnaces in Long Island, N.Y. at just about the turn of the century. Cooper-Hewitt Museum. (*Glass*)

BROWN PELICAN PRINT. John James Audubon's visual accuracy made his wildlife pictures both valuable naturalists' documents and treasured works of art. Artist Robert Havell, Jr., engraved this pelican image directly from an Audubon watercolor sometime between 1827 and 1838. Private collection. (*Prints*)

WORCESTER PORCELAIN SERVICE. Noted for its outstanding decoration, Worcester is one of the most widely collected English ceramics. A design of the Imari type is used on this early nineteenth-century service. Smithsonian Institution, National Museum of American History (National Museum of History and Technology). (*Porcelain*)

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EARLY TWENTIETH-CENTURY RUG. For untold centuries, the major art form of Islamic society has been the handweaving of rugs. This exquisite tiny rug from Sehna district of Iranian Kurdistan shows the skillful adaptation of a design usually found in larger rugs to a small, rarely used format. George Walter Vincent Smith Art Museum, Springfield, Mass. (*Rugs*)

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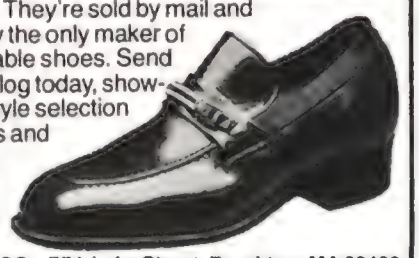

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Book reviews

Corridors of Time: 1,700,000,000 Years of Earth at Grand Canyon
Ron Redfern
(Times Books, $55)

Of all the marvels peculiar to the American landscape, none is as encompassing as the Grand Canyon. It is the Earth's encyclopedia, with a chapter on every geologic epoch and essential passages on flora, fauna and the rise of Man.

The Grand Canyon's numerous wonders are matched in a sense only by human attempts to decipher it, to fathom its profound mysteries and secrets through pictures, science and simple lore. Rarely, however, are all three melded so keenly as in this astonishing tome. Ron Redfern, a British photographer living in Denver, has accomplished a feat of such dizzying scale as was formerly reserved for the Victorians. He has resuscitated the distinctly 19th-century infatuation with panoramic photography and in the process has improved it, developing a technique that, without the distortion of the wide-angle lens, captures vistas of up to 320 horizontal degrees.

To contemplate Redfern's Grand Canyon panoramas is to reexperience some of the exhilaration and sheer wonder of the place. They are large, bird's-eye-view-scenic, surreal works. Redfern possesses an acute eye for the drama of a sunset, the brilliant clash of titian cliffs on azure sky, patches of snow poised on sandstone pinnacles—in short, the severe contrast and exquisite detail of this awesome land.

In assembling *Corridors of Time*, Redfern intended to illuminate for the amateur the plain truths of Grand Canyon—how old it is, how it was formed, what its

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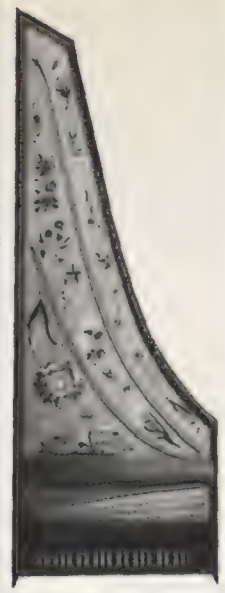

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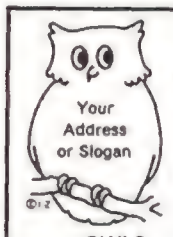

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features represent—hoping in the long run to achieve the modest end of unlocking "the meaning of the Grand Canyon region." Marginal diagrams and full-color drawings aid him in his work, and at those brief moments when the commentary flounders in proper nouns of periods and places, he introduces an anecdote in the charmingly didactic manner of an English schoolmaster (his application of the thunder-and-fire mythology of Jupiter and Vulcan to the now-inactive volcanoes of the Colorado Plateau is particularly apt).

Because any explanation of the Grand Canyon is incomplete without an inspection of the entire Colorado Plateau, Redfern extends his inquiry to the sienna crags of Zion and the "preposterous pink spires" of Bryce. Both merit the same exacting photographic attention as the canyon on the Colorado River, with Redfern the colorist and composition artist again at work, seemingly having orchestrated sky and sun and Earth in a spectacular symphony of color and light. His exposition of the roles of Zion and Bryce in the Canyon scenario unfolds naturally in the course of the book, so the reader has no trouble deducing the relation between the younger canyons and the older.

Of the plant and animal life that has evolved in the Canyon and along its rims, Redfern reminds us that "the present is the key to the past." By relying once more on his photographs and penchant for organized description, he constructs (in a chapter entitled "Of Trilobites and Brachiopods and Great Red Walls") a clear picture of primitive life, most evident in the Canyon's Redwall, "an incomprehensibly vast collection of the fossilized skeletons of sea animals which were consolidated into rock." Incorporating simplified theories drawn from the basic sciences, Redfern guides the reader through the maze of ecological evolution that resulted in the manifold flora and fauna of the Canyon, forms of life that no doubt encouraged the presence of prehistoric Man, and later, of civilized Indian tribes such as the Anasazi, the Hopi and the Havasupai.

Throughout this volume, Redfern has sagely shunned the temptation to apply poetic metaphor to his photographs, leaving the verse for the calendars and inspirational posters. For Redfern, the poetry of the Canyon is implicit in the pictures themselves, and in the story be-

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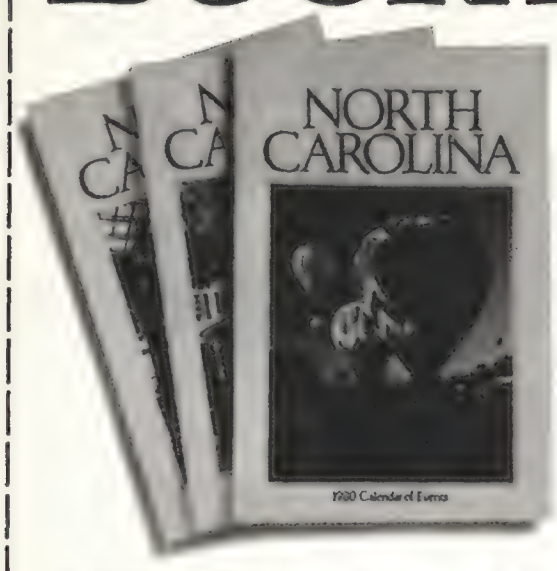

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—*John Sullivan*
Denver critic

Left Handed: A Navajo Autobiography
Walter and Ruth Dyk
(Columbia University Press, $25)

Anthropology is called the science of Man, but it often appears to be the science of abstractions about Man. In too many books the individual human beings disappear behind the paraphernalia of kinship terms, settlement patterns and tool types. Only a few studies give us a sense of what it is to *be* a member of the group in question. This book belongs on the short shelf of those few volumes taking us into the daily life of American Indians.

And I do mean *daily* life. Left Handed is a new husband 20 years old when the book opens, and he takes very nearly 600 pages to recount the happenings of the next three years. He recalls his experiences in strict chronological order, and in remarkable detail, especially considering that he dictated this account in the 1930s, almost 50 years after they happened. He remembers not only the high points—marital troubles, travels, illnesses of relatives, matchmaking, feuding with his mother-in-law, religious ceremonies, hunts—but also the everyday business of making a living, getting along with neighbors and domestic life.

He gives us a deep sense of how the Navajo lived in the 1880s. It was a life very different from ours, poorer in some ways, richer in others. He and his friends and relations worked very hard and moved in a narrow orbit. They had, compared with ourselves, relatively few and simple possessions, mostly made at home. They had to transport all these goods yearly on horseback between summer and winter camps. They had little latitude for personal choice. Indeed, to take up any life except that of their fathers seems not to have occurred to them.

But everywhere they went, they moved among kinsmen and the kinsmen of kinsmen. They lived in a world of people bound to one another by ties of blood,

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clanship and obligation. Being young and strong, Left Handed spends much of his time willingly helping older relatives. This seems to him only as it should be, and they in turn do for him the most efficacious chants and prayers; they generally watch out for him. Left Handed's world has yet to crack open into modernity. It is a far more coherent world than the one in which we live today.

This book is the second part of an important document. Left Handed's early years saw print in 1938 as *Son of Old Man Hat*, but illness kept anthropologist Walter Dyk from completing the present volume. His wife Ruth saw it through after his death in 1972.

The book bears all the signs of dedicated labor in the cause of science. Left Handed told the story in Navajo to an interpreter, Philip Davis, who repeated it in English to Walter Dyk, who wrote it down verbatim. The three men spent a thousand hours alone together working on the story, which appears essentially as Dyk heard it. This scrupulous methodology accounts for the book's great strength for the specialist, and also, alas, for its weakness for the general reader. Left Handed was recounting his life, not telling a tale; it has none of the thematic unity of fine biography. And Davis had no feeling for English, which was to him a foreign tongue. The book may lack pace and grace, but it never lacks the rich circumstances of real life. We don't take the luxury motor-coach tour of the Navajo experience; rather, we live with an ordinary family and see it from the inside.

—*Beryl Lieff Benderly*
Author, *Dancing Without Music*

The True History of The Elephant Man
Michael Howell and Peter Ford
(Allison and Busby, distributed in the United States by Schocken Books, $9.95)

According to his birth certificate, Joseph Carey Merrick was born in Leicester in 1862. He died in the London Hospital in 1890. He was, in his time and in ours, endlessly fascinating.

The "Elephant Man" suffered from the most extreme case of multiple neurofibromatosis in the annals of medicine. The tumors which developed, beginning at the age of five, on Merrick's nerve fibers led to bone malformations as well as external growths of the most grotesque proportions, including a trunklike tumor

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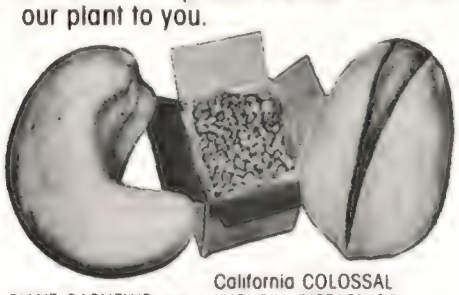

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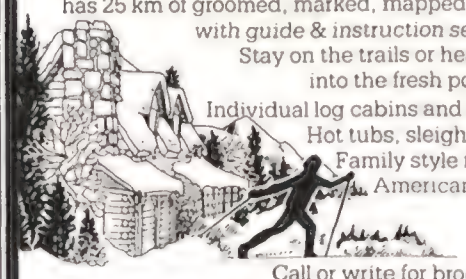

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on his face. The disease still is incurable.

The subject of a recent play and film, the "Elephant Man" has intrigued the medical world since his appearance as a freak on Whitechapel Road near London Hospital in 1884. One must assume from the "True" of the title that Michael Howell, an English doctor, wished to correct the romanticized versions now in currency. Indeed, it is the straightforwardness of the authors' account that makes this such a powerful book.

A drearier, more unbearable existence than Merrick's can hardly be imagined. Until he was rescued from a third-class waiting room at Liverpool Street Station by Dr. Frederick Treves, a distinguished London surgeon, his life from the age of 12 had been unremitting torture. After his mother's death, when he was almost 11, he began a nomadic life of odd jobs in an effort to pay for his keep with various family members. As his appearance grew more grotesque, however, his usefulness as a street hawker diminished and his license to sell was not renewed. In desperation, he presented himself to the Leicester Union Workhouse. He was 17.

After five years in the workhouse, he wrote to Mr. Samuel Torr, a music-hall entertainer and operator of the Gaiety Palace of Varieties. It was arranged that he would become a part of Tom Norman's traveling show. To the charges that this was unconscionable exploitation, the authors point to the excruciating alternatives and the fact that Merrick was able to acquire a rather sizable nest egg.

Merrick's security, such as it was, was pathetically short-lived. As the social conscience of Victorian reformers took hold, freak shows were banned and Tom Norman had to close down. Merrick, forced to join the troupe of an unscrupulous showman, ended up on the Continent with his savings stolen, entirely alone.

It was at this point, in 1886, that he was rescued by Treves, whose calling card he had kept from a professional visit several years before. The personal odyssey of Treves as he led Merrick out of his personal hell into the warmth of an apartment at the hospital and the comfort of companionship is the real stuff of the story. Fortunately, Howell and Ford rarely seize the countless opportunities for sentimentality inherent in this relationship. Instead, they give us a carefully drawn portrait of two remarkable men and their exchange of faith.

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When Treves first meets Merrick, he writes: ". . . at no time had I met with such a degraded or perverted version of a human being as this lone figure displayed." He assumed that Merrick was retarded; "That he could appreciate his position was unthinkable."

Through Treves' intervention, a newspaper appeal made Merrick's permanent lodging at the hospital possible. Following the lead of Princess Alexandra and Dame Madge Kendall, a well-known stage actress, Victorian ladies took a great interest in Merrick. For this man who could neither speak, nor smile, nor sleep as others did, contentment was an affectation of normality.

In one of the most touching of the book's many poignant moments, Treves gives a dressing case with silver fittings to Merrick for Christmas, at his request. Utterly useless, the razors and hairbrushes "turned out to be a perfect prop for Joseph's imagination. . . . he became an elegant sophisticated man-about-town. . . ."

That he was able to remain unembittered and enjoy his last years is proof of the boundless dignity of the human spirit. It is a credit to the authors that they have respected the integrity of Merrick and Treves with this graceful book.

—Jill Merrill
Washington critic

The Art of the Great Hollywood Portrait Photographers 1925-1940
John Kobal
(Knopf, $35)

When *Sunset Boulevard*'s antediluvian movie queen Norma Desmond tells the world, "We had *faces*. There just aren't any faces like that anymore . . .," she evokes not only the death of the silent film but also the termination of a whole way of life and thought in Hollywood as well, the end of the days when movies meant stars and stars meant untouchable, ineffable, transcendent glamour. Garbo, Dietrich, Valentino—their very names reek of the unattainable. Modern-day stars may be well loved and technically expert, but somehow it's not the same.

If movies ignited the dream, photographers kept the inferno alive. Glamour photographs were the tangible link between the screen and the fan, a way to possess the fantasy, to hold it in your hands. Underappreciated until quite recently (even a 1978 Museum of Modern

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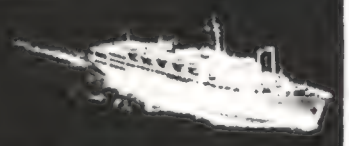

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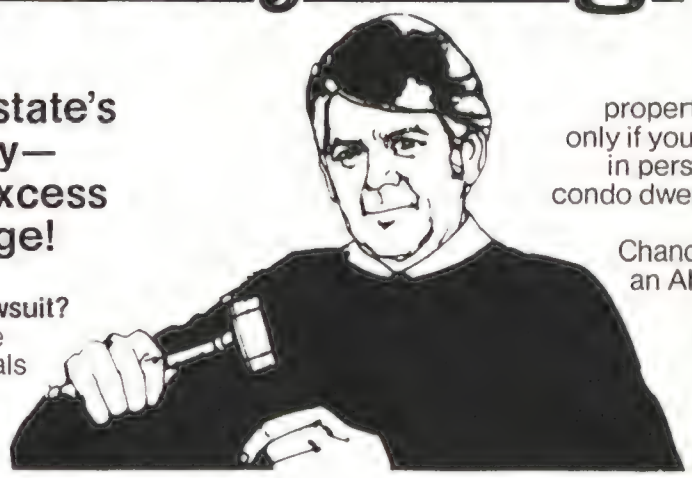

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Art calendar didn't credit the photographs used), the Hollywood portrait artists finally get the attention their work long ago earned in this shimmering, mesmerizing book by John Kobal.

Besides gathering the 150 photographs, all reproduced either from negatives or original prints, Kobal spent five years tracking down and interviewing the photographers and their lofty subjects. Taking glamour portraits, it was agreed, was a collaborative process—the greater the rapport on both sides of the camera, the better the result. "To achieve the effect of the great portraits," Kobal explains, "it was necessary for the sitters to reach a state of trust with the photographer so total that they would unconsciously reveal the very hunger that had driven them to the place where they now found themselves . . . the central emotion that most of us are unable to express because it leaves us so exposed."

One of the things the studios didn't want exposed was too much sexuality, too much flesh. Even though the whole idea of the glamour shot was to make the star as desirable as possible. As George Hurrell, perhaps the best of the lot, put it, "you had to remember that there were a million women out there waiting to see this picture, and he's got to look like 'If I can just get my hands on that guy.' " It all had to be done with discretion, with taste. "There was a whole group of retouchers at every studio who did nothing but take the cleavage out of breasts," remembers photographer Laszlo Willinger. "In those days the stars had one breast . . . from shoulder to shoulder, creating a new breed of cyclops-chested women."

Yet all this nonsense, as well as the pettiness in which the stars often engaged, fades from the mind at the first glimpse of the photographs. Staggering in their beauty and impact, they seem likenesses of a race of splendid gods.

Some images stand out, of course—the palpable sizzle of Jean Harlow, the naked sensuality of Johnny Weissmuller—but they make the greatest impact as a group. For generations of moviegoers, these pictures represented a true marriage of flesh and spirit, the embodiment of fantasies both carnal and pristine. Icons of this type are very much out of favor today, but looking at this book underlines what a pity that is.

—Kenneth Turan

Film critic and book editor, *New West*

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Additional reading

Mono Lake (p. 42)

"The City and the Inland Sea" by Peter Steinhart, *Audubon*, September 1980

"The Ebbing Tide at Mono Lake" by Gray Brechin and David Phillips, *Sierra Club Bulletin*, September 1979

"Mono Lake: Silent, Sailless, Shrinking Sea" by Galen Rowell, *Audubon*, March 1978

Morgan Library illuminations (p. 52)

The Art of the Illuminated Manuscript by David M. Robb, A. S. Barnes, 1973

The Materials and Techniques of Medieval Painting by Daniel V. Thompson, Dover, 1957

Bonding (p. 60)

"Touch of Sensitivity," WGBH, Boston. Order from NOVA, Box 1000, Boston, Massachusetts 02118

Patterns of Attachment by Mary D. Ainsworth, Lawrence Erlbaum Associates (Hillsdale, N.J.), distributed by Halsted Press, 1978

On Becoming a Family by T. Berry Brazelton, Delacorte, March 1981

Attachment by John Bowlby, Basic Books, 1969

Solar-powered plane (p. 70)

"A Case Study in Design: The Gossamer Condor" by Paul MacCready, *Astronautics & Aeronautics*, June 1979

The Gossamer Condor and Albatross: Case Study in Aircraft Design by James D. Burke, AeroVironment Inc., AIAA Professional Study Series, New York, 1980

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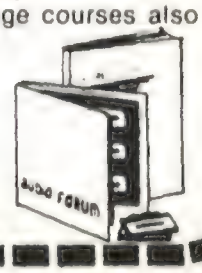

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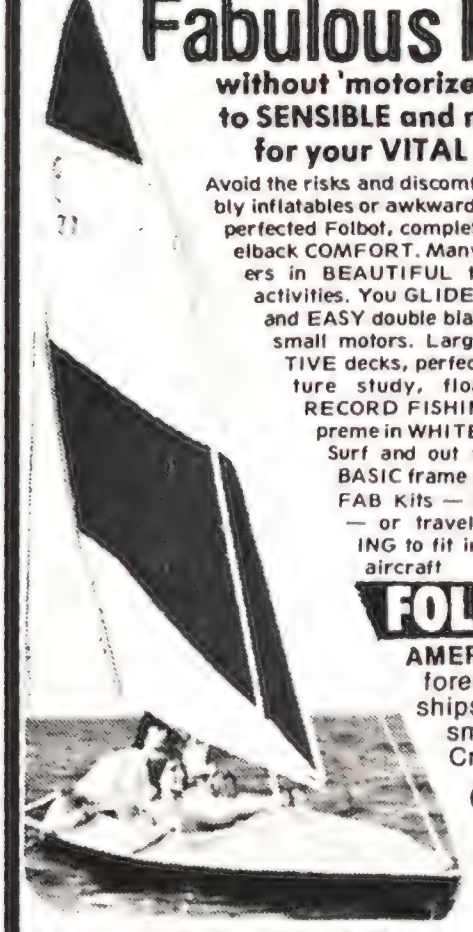

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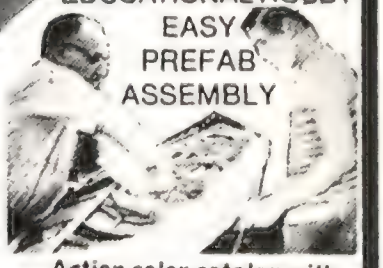

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"The Triumph of Paul MacCready's Gossamer Albatross" by Jack Lambie, *Soaring*, August 1979

National Symphony (p. 80)

Orchestra, edited by André Previn, Doubleday, 1979

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Atlanta airport (p. 90)

Atlanta International Airport: A Commemorative Book, edited by James L. Townsend and Paul Hagan, Garrett/Lewis/Johnson and National Graphics, Atlanta, 1980

Harry White (p. 96)

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Cold Regions Lab (p. 102)

Antarctica by Eliot Porter, E. P. Dutton, 1978

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The Winds of Mara by Colin Fletcher, Knopf, 1973

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The Thousand-Mile Summer by Colin Fletcher, Howell-North Books (Berkeley), 1964

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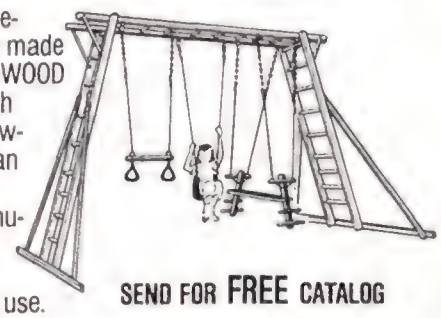

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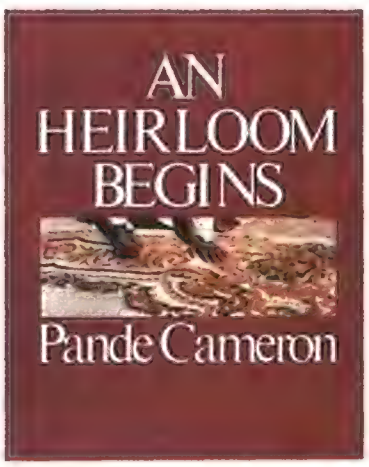

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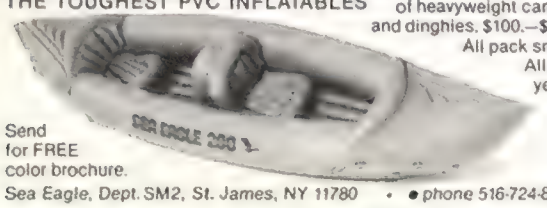

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Smithsonian highlights

Addison Scurlock's portrait illustrates Anacostia Museum's *Anna Cooper* show.

Music, dance, films, lectures and children's activities are on the February Smithsonian calendar to mark Black Heritage Month. The Museum of African Art is hosting a series of programs (call 287-3490 for information) and also opening a major exhibition, *African Costumes and Jewelry*. At the Anacostia Neighborhood Museum, a comprehensive exhibit documents the life of Anna J. Cooper (right), an educator born into slavery whose roles as a humanist, author and developer of social programs for women in the District of Columbia present a picture of the times.

Special February events

Anacostia Neighborhood Museum
Anna J. Cooper: A Voice from the South —New exhibit surveys Dr. Cooper's life in the late 19th and early 20th centuries.

Museum of African Art
African Costumes and Jewelry (February 27-May 15)—Includes appliquéd cloth, headpieces, costumes (opposite) and secular jewelry from nine countries.
Happy Birthday, Frederick Douglass (February 14, 2 P.M.)—Performance and lecture.

National Air and Space Museum
The Flying Tigers (February 19, 7:30 P.M.)—Talk by two former flyers.
Celestial Clockwork (February 7, 9 A.M.) —Lecture explores the calendar.

Cooper-Hewitt Museum (New York)
Matchsafes (February 3-April 12)—Some 350 matchsafes—made from precious metals, shells and nuts.
Ephemeral Images: Recent American Posters (through March 29).

Hirshhorn Museum & Sculpture Garden
Directions 1981 (February 12-May 3)—The second in a series of group shows includes 51 works by 16 artists.

Museum of Natural History
The Rocket—Tourmaline crystal valued at $15 million added to Gem Hall.
Brother Ah and the Sounds of Awareness (February 27, 10:30 A.M. and noon; February 28, noon and 2 P.M.)—Family program based on traditional music and dance of Africa and the Caribbean.

National Museum of American Art
Family Day (February 8)—Free activities —kite making, folk dancing, crafts.
Aspects of Collecting the Modern: 20th-Century Painting and Sculpture in NMAA (February 20-May 5)—Exhibit of 126 works designed to show the museum's principles of collecting.
Art from the Vice-President's House (February 27-May 17)—Sixty works from Pacific Coast states.

National Portrait Gallery
How Fleeting is Fame (February 2-August 23)—Portraits of 19th-century celebrities whose fame did not last.
Voices of Protest and Hope: The Civil Rights Legacy (February 21, 1:30 and 3 P.M.)—Portraits in Motion series.

Renwick Gallery
American Porcelain: New Expressions in an Ancient Art (ends August 16)—Major show (p. 113); related lecture by artist Rudolf Staffel, February 12, 8 P.M.

National Museum of American History
Be My Valentine (through March 15)—Two cases of collectible cards (p. 153).
Roy Wilkins: Mr. Civil Rights—Photos and other memorabilia.

Smithsonian events

For tickets to February resident associate events and lectures, call 357-3030:
The Grand Tour (February 28)—All-day seminar on 18th-century British custom.
Gable the King: Film Series (Sundays, February 22-March 22, 4 P.M.).
A Visit with Matisse (February 3, 6 P.M.).
Saturn, Jewel of the Heavens (February 25, 8 P.M.).

For further information and tickets to performing arts events, call 357-1500:
Jazz! (February 5-March 1)—A&I Theater, Wednesdays-Sundays.
Black American Gospel Music (February 6-8)—Conference includes concerts, workshops; for schedule, call 287-3237.
Lewis Family (February 15, 8 P.M.)—Country, gospel, bluegrass.
Dance and the Camera: Sage Cowles and Molly Davies (February 22, 23, 8 P.M.)—Film and live dance; also, seminar and workshop at other times.

Museum of African Art exhibit includes appliqué work; above, Ibo costume.

Radio Smithsonian

Listen to the Smithsonian at home. Radio Smithsonian, a weekly half-hour visit to exhibits and performing arts, is heard nationwide on some 65 stations. Smithsonian Galaxy, a series of twice-weekly, 2½-minute features, is broadcast by 200 stations. To find out which station in your area carries either program, write: Office of Telecommunications, A&I Building, Room 2472, Smithsonian, Washington, D.C. 20560.

Musical Weekend in May

The Tenth Annual Musical Weekend, sponsored by the Division of Musical Instruments and the steering committee of Friends of Music at the Smithsonian, will be May 1-3. Hotel accommodations for two nights and all meals are included. For details and reservations write: Musical Weekend, Room 4124, National Museum of American History, Smithsonian Institution, Washington, D.C. 20560.

Smithsonian Institution Traveling Exhibition Service

SITES circulates exhibitions to hundreds of cities outside Washington, D.C. To sponsor a show in your community, write to Eileen Harakal, SITES, Smithsonian Institution, Washington, D.C. 20560. Here are some February exhibits:
Tempe, Arizona (January 24-February 22)—*Pochoir*, Arizona State University Art Gallery.
Waycross, Georgia (February 7-March 8)—*Folk Arts and Crafts: The Deep South*, Okefenokee Heritage Center, Inc.
Minneapolis (February 21-March 22)—*The Contemporary American Potter*, University of Minnesota.
Warrensburg, Missouri (January 31-March 1)—*America's First Ladies*, Central Missouri State University Museum.
Hattiesburg, Mississippi (February 7-March 8)—*Cut on Wood*, University of Southern Mississippi.
Basking Ridge, New Jersey (January 31-March 1)—*Aquaculture: A World View of Seafarming*, Somerset City Park Commission.
Buffalo (February 28-March 29)—*Biological Photography*, Museum of Science.
Cleveland (February 7-March 8)—*Images of Old Age in America*, The Howard Dittrick Museum of History.

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A valentine from the heart

Bring on the flowers, the Cupids and tender loving verse. It's Valentine's Day, time to cheer some February hearts. The holiday origin, however, wasn't so joyful. A young Roman priest, Valentine, who refused to renounce Christianity, was executed on February 14 in A.D. 270. He supposedly left a message for his jailer's daughter, and signed it "From your Valentine."

That particular heartwarmer isn't in the collection of the National Museum of American History, but some 5,000 other valentines are, including two cases of cards which go on display this month. "The Smithsonian has more than 60,000 cards of all kinds, one of the largest known collections," says curator John N. Hoffman, whose office is crammed with samples preserved in plastic.

Many of the valentines are antique and handmade, and many are miniature reflections of history—a Union soldier writing tender verse beneath the flaps (which fold out) of his tent or a Twenties flapper with her eye on Cupid. Embossed "mechanicals" unfold to three-dimensional scenes. Handcut lace frames a lock of hair; a portrait peers from a card of padded satin and fringe. "Despite all the modern printing techniques," says Hoffman, "I don't think the artwork of today's cards can compare with the old ones."

Valentine love notes and messages became popular in Europe in the mid-1700s, replacing the giving of personal gifts. Imports dominated the American valentine scene until the mid-19th century, when Esther Howland of Worcester, Massachusetts, introduced handmade lace and embossed cards (lower right). By the end of the century, printers such as Louis Prang and Raphael Tuck were producing cards on a mass scale. Valentines also started to take a turn toward the comic.

Hoffman laments a certain loss of "personalization" in modern cards. He remembers the days when you could still buy "swags," or cut-outs of flowers, birds, hearts, then add a ribbon or bit of mirror, write verse, cut lace, paint a tulip, and create something really special for that special someone.

—Carol Simons

Among early mass-produced American valentines is Louis Prang's cherub, 1883.

Handmade 1895 German "mechanical" unfolds to reveal elaborate scene.

NMAH's collection of 5,000 valentines includes this saucy item of the 1920s.

Raphael Tuck published this gem in 1902 when comic cards became popular.

Lace card, believed made by Esther Howland, epitomizes romantic tradition.

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Tetons Winter Ecology—March 31-April 8: Study the delicate balance of nature in winter with lectures and cross-country ski trips. Observe elk herds and enjoy renowned Jackson Hole.

New York—April 2-5 or April 9-12: Exciting weekend features new American wing at Metropolitan Museum of Art.

Jefferson's Virginia—April 8-13: Study American architecture with visits to Williamsburg, Charlottesville and Richmond.

Mississippi—April 27-May 4: Relive the history of antebellum South with visits to plantations in Vicksburg and Natchez.

Big Bend—May 2-10: Hike the spectacular canyon trails in this southwest Texas park.

Philadelphia—May 20-24: Explore this historic city through museums, walking tours and visits to homes.

Southwest Pueblos—May 22-29: Trace the development of Indian and Spanish cultures in New Mexico; visit pueblos, archaeological sites and crafts centers.

Illinois Archaeology—May 24-31: Join dig which spans nearly 10,000 years. Includes instruction, lab work and field trips.

Bryce, Zion and the Grand Canyon—June 3-11: Study geology and natural history of these dramatic national parks.

Yosemite—June 6-14: Explore the park during its most spectacular season.

San Francisco—June 14-20: Architectural tour includes Carmel and northern coast.

Family Sampler—June 26-28: Special program for parents and children (ages 7-14) to enjoy behind-the-scenes activities at the Smithsonian Institution.

Glacier National Park—July 4-13: Hike the scenic trails in Montana and enjoy the comforts of a lodge at night.

Alaska—July 5-14: Enjoy the wild flowers and birds at a wilderness retreat in Mt. McKinley National Park.

Washington "Anytime" Weekend: Choose any weekend to visit your choice of Smithsonian museums, spend two nights at Loew's L'Enfant Plaza Hotel or Hyatt Regency Washington, each close to the Mall, and see other sights in the city by Tourmobile. Reservations and payments at least ten days prior to arrival.

Foreign Study Tours

These tours range in size from small group experiences to charter adventures and vary in price from low cost to deluxe, depending on the type of travel, destination visited and length of trip:

Guatemala—February 18-March 1: Tikal and other Mayan sites plus Spanish colonial city of Antigua and Indian markets.

Morocco—March 6-21: See the medinas and markets of Rabat, Meknès, Fez, Marrakesh and Casablanca as well as the stark Roman ruins of Volubilis.

Ecuador and the Galápagos Islands—March 22-April 2: Visit Quito, then travel by train to Guayaquil to board the *Buccaneer* for a seven-day study voyage through the famous islands.

Mediterranean Spring—April 25-May 6: Warm days, cool nights and a profusion of flora provide perfect setting for Athens-to-Nice study cruise aboard MTS *Argonaut* with expert lecturers; includes Peloponnesus, Sicily, Malta and Salerno.

Springtime in Greece—May 3-19: Athens plus visits to the renowned sites of ancient civilization when the countryside is a paradise of wild flowers.

Portugal—May 5-19 or October 6-20: Four days in Lisbon; choice of travel to Alto Alentejo with Evora and fortified hill towns of Estremoz; or old Lusitania.

London—May 10-24: Museums, seminars, walking tours and theater; choice of excursions includes Yorkshire.

Odyssey of Flight—May 21-June 8: Paris Air Show, the Musée de l'Air, Britain's Shuttleworth Collection and more, with Air and Space Museum curators.

Malaysia, Borneo and Singapore— May 25-June 12: Kuala Lumpur, Penang and Malacca—plus a choice of travel to the seldom-visited east coast, the remote National Park, or an exciting excursion to the jungles of Borneo.

Wild Highlands of Scotland—May 28-June 13: In cooperation with Aigas Field Centre, study natural history and wildlife.

Alpine Countryside—June 6-21 or September 12-27: Stay in an Austrian mountain village and study this historic area.

Waterways of France—June 28-July 9: Join expert lecturers aboard MTS *Argonaut*. Cruise the Loire, Seine and Gironde rivers, from Paris to Southampton; visit cities, vineyards and Belle-Isle-en-Mer, Guernsey and Sark.

Wales—July 4-17: Savor dramatic landscapes; visit archaeological sites, fishing villages, mines, manor houses and castles; attend the *Eisteddfod Llangollen* (International Music Festival).

The Lakes of Finland—July 10-26: Celebrate summer with an extravaganza of cultural happenings, including the Savonlinna Opera Festival.

An Alpine Walk—August 2-16 or August 16-30: Hike through the Swiss Alps to study peaks, waterfalls and flora.

Oxford/Smithsonian Seminar—September 11-26: Aspects of European Art and Literary Oxford are among in-depth courses taught by Oxford faculty. Enjoy day trips and special ambience of the town while living in Worcester College.

People's Republic of China: 13 tours with five different itineraries.

Write National Associates, A&I 1278, Smithsonian Institution, Washington, D.C. 20560 for specific tour/seminar brochures or call (202)

in Washington

Selected Studies Seminars

Treat yourself to a popular program at the Smithsonian that combines excellent speakers and small, specially arranged "behind-the-scenes" tours. Choose from:

The Splendor of Byzantium—February 15-20: The magnificent arts of Constantinople and the vast Byzantine Empire in illustrated lectures, along with tours of the exquisite collections at Dumbarton Oaks (Harvard University's research center) and Walters Art Gallery (Baltimore).

Model Airplanes: Then and Now—February 22-27: Foremost talents discuss every aspect of aeromodeling with an abundance of film clips, slides and actual models at the Air and Space Museum.

American Painting in the 19th Century—March 22-27: Exploration of the achievements of acknowledged masters such as Copley, Cole, Church, Homer, Ryder and Eakins. Includes tours of the Capitol, National Gallery of Art and National Museum of American Art.

American Antique Furniture—March 22-27: Connoisseurship of masterpieces, 1650-1840. Includes color slides of great collections, detection of fakes, care of antiques, and tours of the elegant Diplomatic Reception Rooms at the Department of State and the Winterthur Museum.

World War II Aviation—March 29-April 3: The outstanding aeronautical staff of the National Air and Space Museum and guest experts offer new insights into how the major air forces of the world came into being, and how quantum jumps in aviation production and performance were achieved. Includes tours to see many of the only surviving World War II planes.

Naval History—April 26-May 1: Famous authorities and authors trace the evolution of the U.S. Navy from the age of sail to nuclear power. Includes films and tours of the Smithsonian's Naval History collections, the Navy Memorial Museum and the U.S. Naval Academy.

Historic Horticulture—May 3-8: Celebrate spring in the lovely 18th-20th century gardens of Mount Vernon, the National Arboretum, Dumbarton Oaks and the du Pont estates of Longwood and Winterthur.

357-2477 (tours) or (202) 357-2475 (seminars).

If you'd like a poster of these two gentlemen for your bar, drop us a line.

JACK DANIEL AND HIS NEPHEW, Lem Motlow, disagreed on most everything. Until it came to making whiskey.

Mr. Jack (that's him on the left) was a fancy dresser. So Lem refused to wear a tie! But they both insisted on mellowing their whiskey through huge vats of charcoal before aging. And we're about the only distillery who still does it that way today. You see, Mr. Jack once said, "Every day we make it, we'll make it the best we can." And neither Lem nor anybody else ever disagreed with that.

CHARCOAL MELLOWED
DROP
BY DROP

Tennessee Whiskey • 90 Proof • Distilled and Bottled by Jack Daniel Distillery
Lem Motlow, Prop., Inc., Route 1, Lynchburg (Pop. 361), Tennessee 37352
Placed in the National Register of Historic Places by the United States Government.

By Richard L. Williams

At Joe's Barber Shop, unisex rears its heads

As if we weren't already surrounded and surfeited by signs of the terrible times, it seems somebody out there must be lying awake nights thinking up new and catchy names and signs for old places of business —and making a career and a living out of name-selling.

The old, established names like Abercrombie & Fitch are going fast, and the new names are taking over. How else but midnight madness to explain the declassé nomenclature revolution that has overtaken (for example) three kinds of private enterprise—the used-clothing store, the plant place and the barber shop?

In the old days, if you wanted to—or had to—pick up a larger but not-quite-new snowsuit, or dress or fur coat, you went to Goodwill, or a "thrift shop." Nowadays the choice is much wider, and much more chic. In New York you can go (and here come some subexamples) to the Odds of March, or Regenerations, or Repeat Performance, or Return Engagement, or even to Second Hand Rose's.

In Chicago you can go to Mary's Helping Hand Club, or the Y-Not Resale Shoppe. In Washington, D.C., there are Almost New, Nearly New, Next-to-New, Nice as New, Think-New and (why not?) Once Is Not Enough. And Clothes Encounters of a Second Kind.

As for plant stores, which didn't even exist a generation back (you went to a florist if you just had to have a new plant) they, too, are hoping to profit from the new wave of name-calling. How do you like Angies New Leaf, or Rolling Greens Inc., or Plantasia (all in Washington)? Or Garden of Eden, or Cereus Business, or Greenkeepers of His Garden (Chicago)? Or Farmer Grey's Potted Plants Inc., or Treemania, or Plantation, or Rain-Dears Ltd. (New York)?

The other day I went looking for Joe's Barber Shop, an old neighborhood institution, and got lost. I looked not on foot but in the Yellow Pages, and was reminded at a glance that Mother Bell, who keeps advising us to let our fingers do the walking, is au courant as ever as a chronicler of our cultural change-for-the-worse.

Joe's, as a place-of-business name, is not yet extinct but (temporarily, at least) is as far out of style as the old musical phrase "shave and a haircut, two bits." (Old as I am, I forget where *that* came from.) Nowadays barbers call themselves stylists, a term reserved only a decade or so ago by superoperators like Mr. Kenneth specializing in the hairdressing of ladies like Jackie Kennedy. Also they now advertise themselves as doing "unisex" work (a term never heard until a little more than ten years back), which I understand has nothing whatever to do with sex-changes or making one sex look like another, but means only that all genders are equally welcome to come in and sit aproned on a comfy throne while a stylist snips and blow-dries away.

One can't help worrying about Joe. How can he compete with a unisex emporium calling itself Prime Cuts, or The March Hair, or Head's First Salon, or Hairloom, or Hairs Alive, or Shearlocks? All these are in San Francisco, where the three remaining Joe's Barber Shops must be struggling hard to stay in business.

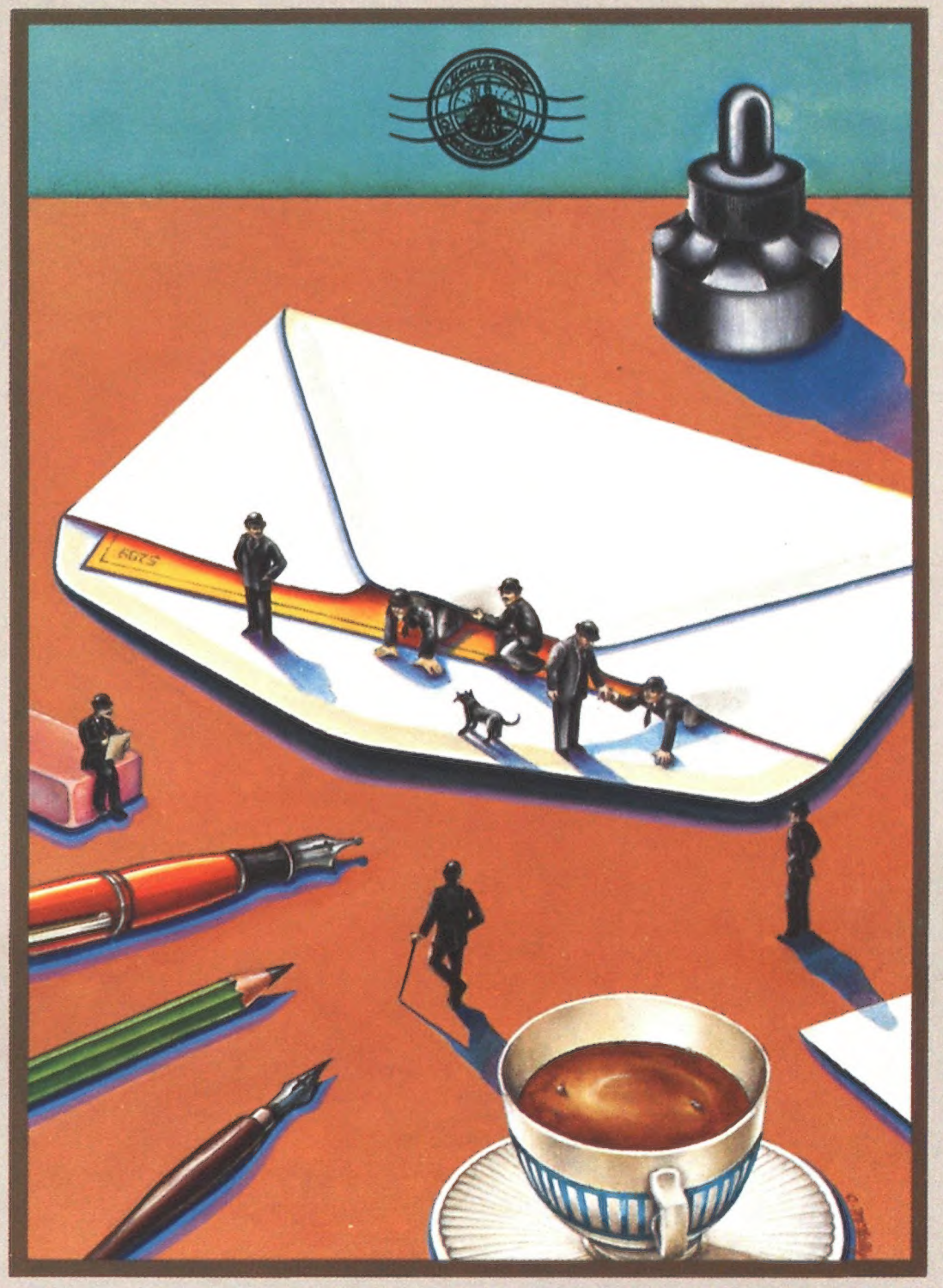
Manhattan is somewhat more conservative, to judge by its listings, having a lot of places that call themselves barber shops (including two Joe's), but also being the home of Maddy's Clip Joint for Men, Hair by Heaven Inc., and the imaginatively self-styled Lion's Hair Den.

Chicago has a dozen Joe's, and quite a number of Tony's and Sam's, but they are up against the likes of Lookin' Good Unisex Hair Design and Magical Mystery Tours of Unisex Hair Styles. The writing on the barber's mirrors is there.

Washington, D.C., is not to be outdone in namania. You can get your hair cut there at From Hair to Eternity, the Headmasters, A Cut Above, Shear Genius, The Hairloom, Hair-Em, Stop Right Haire, or Rape Of The Lock. The town is down to only one place forthrightly still calling itself Joe's Barber Shop.

I finally found my old Joe's, though my fingers were footsore from all that walking. Joe Obsina is still doing his same old thing at his same old place, but now he's doing business as "Monsieur Josef, Unisex Hairstylist" by appointment only. Not for me, he doesn't make an appointment. It's enough to make you cut your own hair, or have your spouse do it, or perhaps just tear it out.

"Chief, there's more to this case than meets the eye!"



Tricky things, envelopes. They're so much a part of our lives we tend to forget what they come from.

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Which means our essential need for envelopes could conflict with our emotional attachment to trees.

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